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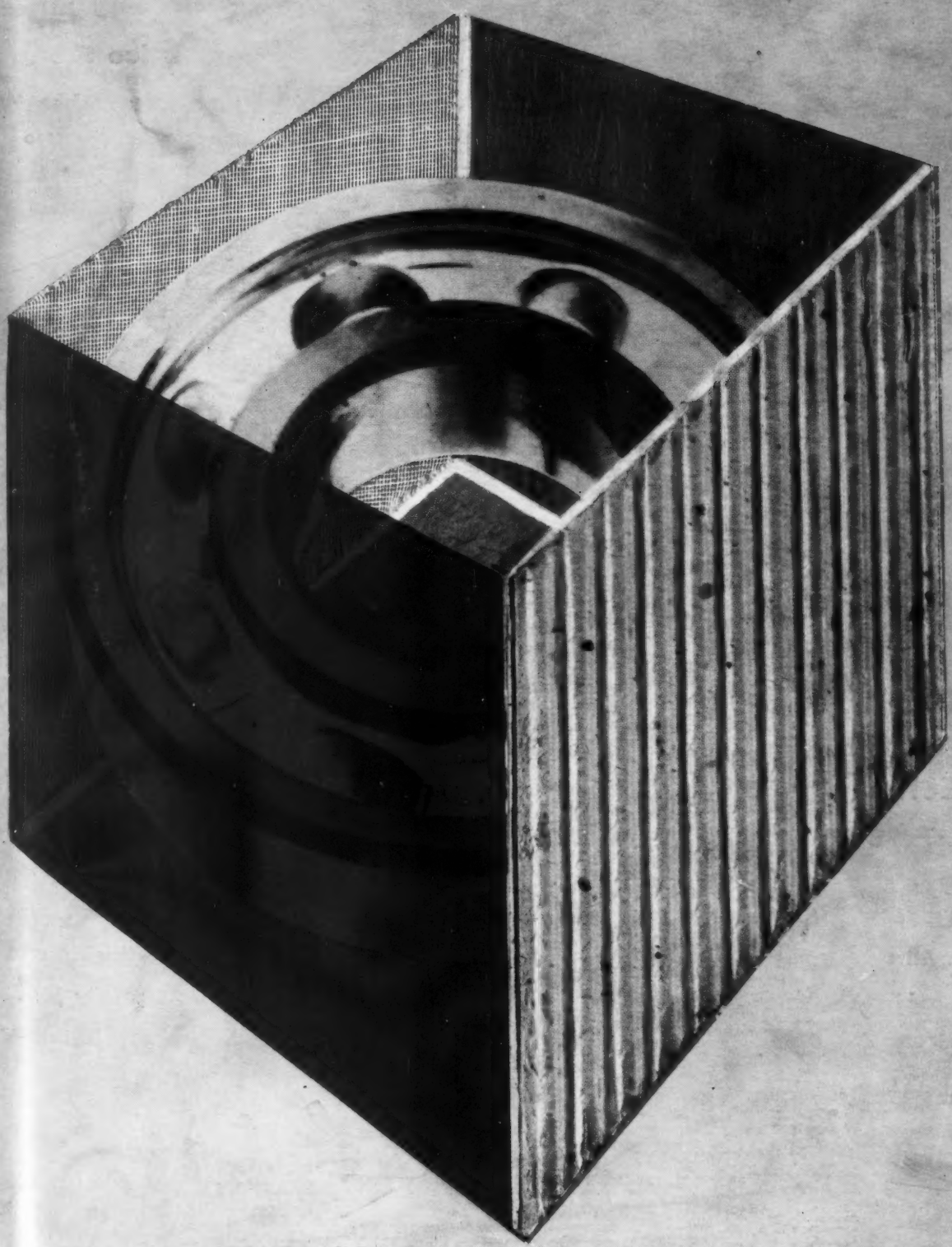
AUG 21 1945

DETROIT

MODERN PACKAGING

August

1945





**"Let every man
practice the art
he knows best"**

CICERO

In Gem Cutting the most precious stones are entrusted only to craftsmen of long proven, trustworthy skill.

IN ADHESIVES the formulation and application of synthetic resins to today's bonding problems is best entrusted to technicians of long practiced, specialized skill. National . . . a specialist for half a century in all types of industrial adhesives and a pioneer in the development of synthetic resin adhesives . . . offers you the advantages of an experience that goes far beyond the formulation of a single type or limited group of resins. All types, both singly and in blends of high complexity are employed for packaging, converting, assembling. And each recommendation . . . on the basis of performance . . . can fully justify itself economically. Inquiries are invited — NOW!

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ADHESIVES

EVERY TYPE OF ADHESIVE FOR EVERY TYPE OF ADHESION

Producers of Metal and Molded Caps for Glass Packages



Phoenix Metal Cap Co., Chicago 8 and Brooklyn 18

Elmer Jacobs

MODERN PACKAGING

VOLUME 18

AUGUST 1945

NUMBER 12

★ ★ ★

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COVER—by Peter Piening.—A piece of corrugated board, some swatches of foil, kraft and fabric laminations, a sheet of colored transparent film—combined in a simple design—tell a forceful story of the preservation packaging that has carried American war materials to the battlefronts of the world.

W

e are proud to produce

this famous Coty package... a typical example of better

products in better packages... by Ritchie

W. C. *Ritchie* and COMPANY

8803 Baltimore Avenue • Chicago 17



NEW YORK • DETROIT • LOS ANGELES • ST. LOUIS • MINNEAPOLIS

AUGUST • 1945

5



**HATS OFF TO THE PAST
COATS OFF TO THE FUTURE**



Specialists in Food Protection Papers

GENUINE VEGETABLE PARCHMENT • WAXED

SPECIAL TREATED • GREASEPROOF

**KALAMAZOO VEGETABLE PARCHMENT COMPANY
PARCHMENT • KALAMAZOO 99 • MICHIGAN
BRANCH PLANTS AT HOUSTON, TEXAS AND PHILADELPHIA, PA.**

Announcing Geon latex



Water-borne polyvinyl resins provide safer, simpler coating methods

GEON latex is a film-forming plastic material used to apply thin coatings to fabric, paper, fibre, thread, wire or any other material to which coatings can be applied by conventional methods. It is a true latex—a water dispersion containing a solid content of approximately 50% vinyl resin. Especially suitable for use in continuous processes, GEON latex is an easy-flowing, milk-like liquid of remarkably high stability. It is *not* rubber and contains *no* rubber.

When suitably formulated GEON latex can be used with standard coating equipment. Variations in viscosity can be obtained to make GEON latex suitable for use with such machines as knife spreaders, air knife coaters, roller applicators and continuous dip tanks.

In addition to the natural economy

and simplicity of processing, GEON latex, being a water system, offers safety advantages not to be found in solvent systems. The dangers of toxicity and explosion are eliminated. Dangerous, expensive and cumbersome solvent recovery systems are unnecessary because no solvent is used.

GEON latex, like all latices, has its limitations. It is not a "miracle material", that will do away with other coating methods. Yet already its use in military and related applications has proved that entire new fields in coatings will be opened up by this new material, the development of which was a true scientific achievement. For more information, write Department LL-8, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio.



B. F. Goodrich Chemical Company

A DIVISION OF
THE B. F. GOODRICH COMPANY

AUGUST • 1945

7

WANTED: a job for a veteran

SYNTRON coatings have been to the front . . . in the landing barges at Okinawa . . . in the foxholes at Cassino . . . in the mountain retreats near Prague . . . doing the many jobs assigned to them by the Supreme Command. And now, SYNTRON coatings are back from the war . . . hearty, healthy veterans, ready to apply their skills learned on the battlefields to civilian life.

Special SYNTRON coatings are now available for immediate use on your products . . . for application to porous and non-porous surfaces such as paper, wood, plastic, metal . . . to impart qualities such as moisture and vapor protection, grease and oil resistance, heat sealing, etc.

Send us the story of your coating problems. We have a special research laboratory engaged exclusively in the development of new coatings to meet your requirements. Write for full information.



GORDON-LACEY
Chemical Products Co.

57-02 48th ST. • MASPETH, N. Y.

SYNTRON #A121

Heat Seal Coating for Aluminum Foil

Specialty developed for maximum sealing strength for all types of aluminum foil bags or packages. Non-toxic, colorless, odorless. Heat seal strength: alkali resistant. Flash—above 132° Fahrenheit under 1 lb. pressure per square inch.

SYNTRON #A122 Moisture Vapor Proof Coating

Used on all types of paper, cloth and parchment, made fully plastic. Heat sealing, oil and grease resistant, non-toxic. 1 to 3 grams of moisture vapor per 24 hours per square inch. Flash—above 132° Fahrenheit under 1 lb. pressure per square inch.

SYNTRON #V223 Gloss Coating

Highly protective coating to impart high gloss on printed papers of all kinds used for packaging. Non-toxic, colorless, odorless. Oil, acid, alkali, alcohol resistant.



GIVE YOUR PACKAGES A HIGH EYE-CUE

It's the box that carries the product—in more ways than one. Eye-appealing boxes can't fail to excite interest, stimulate sales.

Arrow boxes have a high eye-cue. They pass every test in open competition. They meet the highest requirements of manufacturer, retailer, consumer.

At present, we're concentrating on Government orders, of course. But let us give some thought to your packaging problems. We can plan your packages now so that your merchandise will be ready for a grand reception right after Victory.

For your boxes* of tomorrow—consult Arrow today!

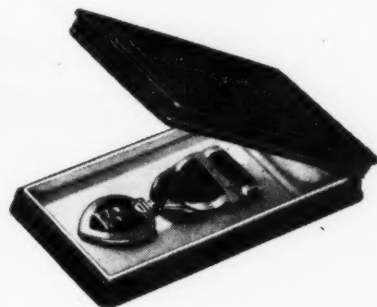
Speed Victory—Buy Bonds!

* metal, plastic, wood or cardboard with coverings of velvet, leather, leatherette, fabric or paper.

Arrow

**BOXES AND
DISPLAYS**

Arrow enters its fourth year of service in the production of boxes which hold the Purple Heart and other medals for the heroes in our Armed Forces. And Arrow is proud that, throughout these years, it has maintained consistent leadership in serving this need of our Army and Navy.



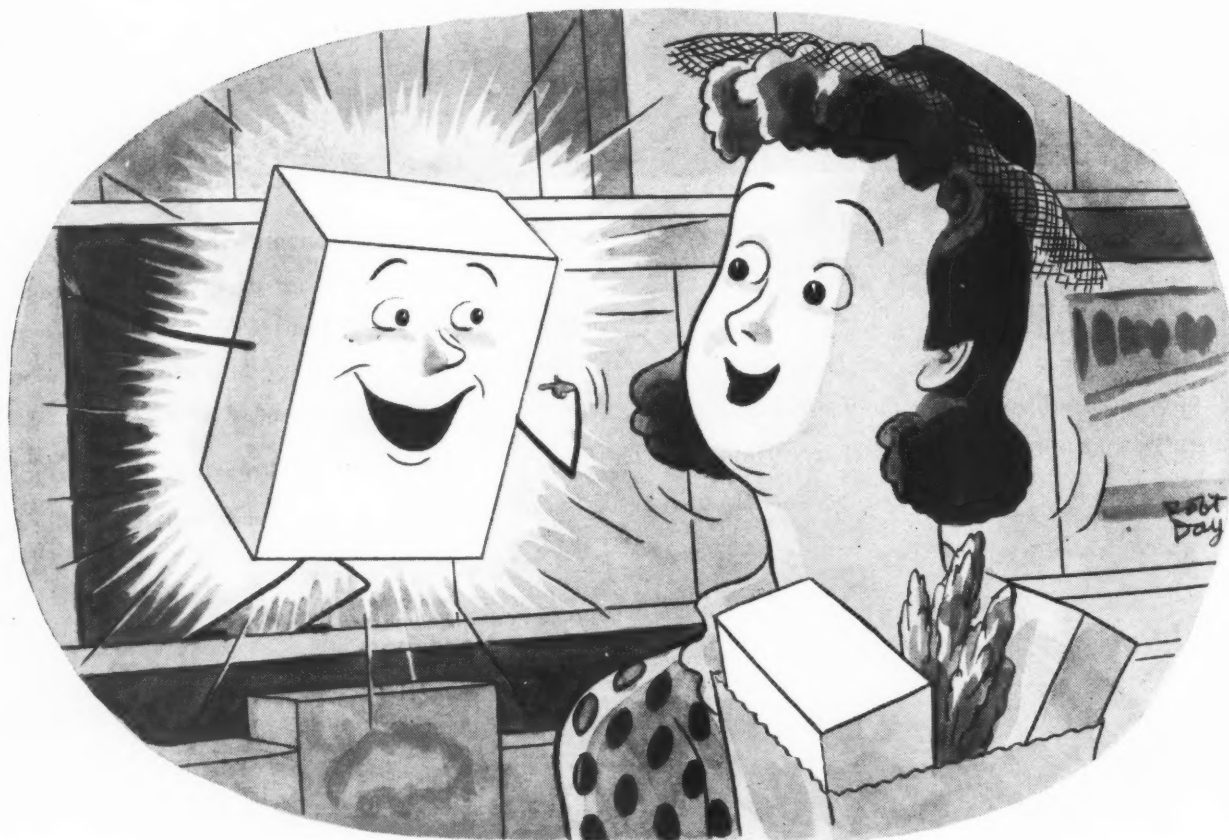
ARROW MANUFACTURING COMPANY INC. • FIFTEENTH AND HUDSON STREETS • HOBOKEN, NEW JERSEY

AUGUST • 1945

9



"M-M... PFUT-T-T... SPUTTER..."



"LOOK, LADY, I'M JUST WHAT YOU NEED."

Exit: The "Silent" Salesmen!

COATED LITHWITE MAKES YOUR PACKAGE SPEAK UP... AND SELL!

THE "Silent Salesman" package or folding carton did all right so long as there was plenty of sales clerks to help it off the shelf.

But, tomorrow, with rising operating costs forcing more and more retailers into self-service, packages will be *on their own*. They'll have to speak up and stand out in mass counter and shelf displays. They can't be "silent" salesmen. They'll have to out-talk competition if they're going to out-sell competition.

**And that's where Cartons of
Coated Lithwite can help**

This revolutionary, machine-coated paperboard makes it possible to print a *speaking* likeness of your product on your package . . . one that says "Stop, Look, Listen!" For *Coated Lithwite* has a velvet-smooth surface . . . a perfect base for printing plates and inks. Colors come up crisply, brilliantly. Your package has a quality look and feel that makes customers instinctively reach for it.

Keep *Coated Lithwite* Cartons in mind as you set up your postwar packaging plan. Clip the memo

below and keep it within easy reach for the day when Gardner-Richardson can again accept new orders for "talking" folding cartons made of this revolutionary machine-coated paperboard.

CLIP THIS!

File this Coated Lithwite memo for reference when this quality paperboard is again available

1. **Made by a revolutionary process.** *Coated Lithwite* is the brighter, whiter paperboard that is formed, made and coated in one high-speed operation. Proved and improved for six years.
2. **Means more eye-appealing cartons.** *Coated Lithwite's* smooth, velvety, chalk-free surface forms a better base for printing inks and plates—reproduces even the smallest type cleanly, crisply. Brings colors up brilliantly—gives halftones a sharp realism.
3. **Fewer jammers and leakers.** *Coated Lithwite* scores accurately without flaking or shattering. Takes a positive, tight seal.

The GARDNER-RICHARDSON Co.

Manufacturers of Folding Cartons and Boxboard
MIDDLETOWN, OHIO

Sales Representatives in Principal Cities: PHILADELPHIA • CLEVELAND • CHICAGO • ST. LOUIS • NEW YORK • BOSTON • PITTSBURGH • DETROIT



McCLELLAND BARCLAY ★★★★★ FINAL

For more than twenty years, he was a favorite of fortune. Gifted with great talent, he enjoyed early recognition, long continued success, the respect of his craft, public acclaim, and a colorful career . . . One of the foremost "pretty girl" artists of his time, Mac Barclay welcomed the opportunity to paint fighting men, and accepted a Navy commission in 1940 . . .

Early in the morning of July 18, 1943, in the Solomons Sea, the LST 342 was torpedoed; and Lieut. Cmdr. McClelland Barclay was not among the survivors. With the men and ships he had come to love so much, it was an ending that

Mac, always an adventurer at heart, would probably have approved.

ONE of his last assignments was for the Sperry Corporation—a series of posters reflecting the first grim year of war in the Pacific. We were privileged to produce the series, and to make an overrun for our own use.

This series of posters in full color, size sixteen by twenty inches . . . a Five Star Final edition of McClelland Barclay, a memento and souvenir of the artist and the man . . . is available to his friends and admirers on request.



EINSON-FREEMAN CO., INC. *Lithographers*

STARR AND BORDEN AVENUES, LONG ISLAND CITY 1, N. Y.

Things to look forward to

A BETTER CARTON FOR THIRSTY POWDERS

Designed by
H. P. SMITH PAPER CO.

using
ALCOA
Aluminum Foil



You can't beat aluminum foil for foiling moisture-vapor. That's a fact that Moisture-Vapor Transmission figures prove.

Take specially treated paper, laminate with Alcoa Aluminum Foil, form into a *well-sealed* carton, and you get a package that makes a monkey out of moisture. It's tomorrow's answer to packaging hygroscopic powders.

It's a sales package as well as a *safe* package.

The sparkle of foil leaps to the shopper's eye and flashes a message of quality.

For the perfect combination of beauty and protection for products that are affected by moisture gain or loss, pack in Alcoa Aluminum Foil. Ask your package supplier or package designer how you can use it to best advantage. ALUMINUM COMPANY OF AMERICA, 2129

Gulf Bldg., Pittsburgh 19, Pa.



ALCOA ALUMINUM FOIL

ALUMINA

still poses problems in glassmaking

FOR centuries glassmakers regarded alumina as an undesirable "impurity" and tried to keep it out of their batches. Then, one day careful analysis disclosed a startling fact. It was discovered that alumina, occurring as an undetected impurity in German sand, gave Thuringian glass its world-wide reputation for superior quality.

Today, as a result, alumina is almost universally used to increase the chemical durability of glass. But it still poses knotty problems for the glassmaker. If he adds too

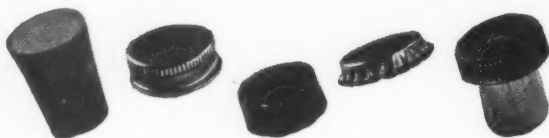
much alumina, it makes the batch harder to melt and the glass harder to form. And alumina is not added in the pure state, but as a com-

ponent of feldspar, which contains, in addition to the alumina, varying amounts of five other glass-making ingredients!

So even after the glassmaker has carefully balanced his composition, he still has to make corrections in his batch based on the chemical analysis of the feldspar to allow for the other ingredients it adds.

To this and other similar problems in glassmaking, Armstrong's glassmakers bring long years of experience and research. Their knowledge, applied with a rigid regard for the highest standards, explains Armstrong's continuing reputation for producing top-quality glass.

You'll find additional interesting information in "Men and Glass." Send for your free copy today. Address Armstrong Cork Co., Glass and Closure Div., 5908 Prince St., Lancaster, Pa.

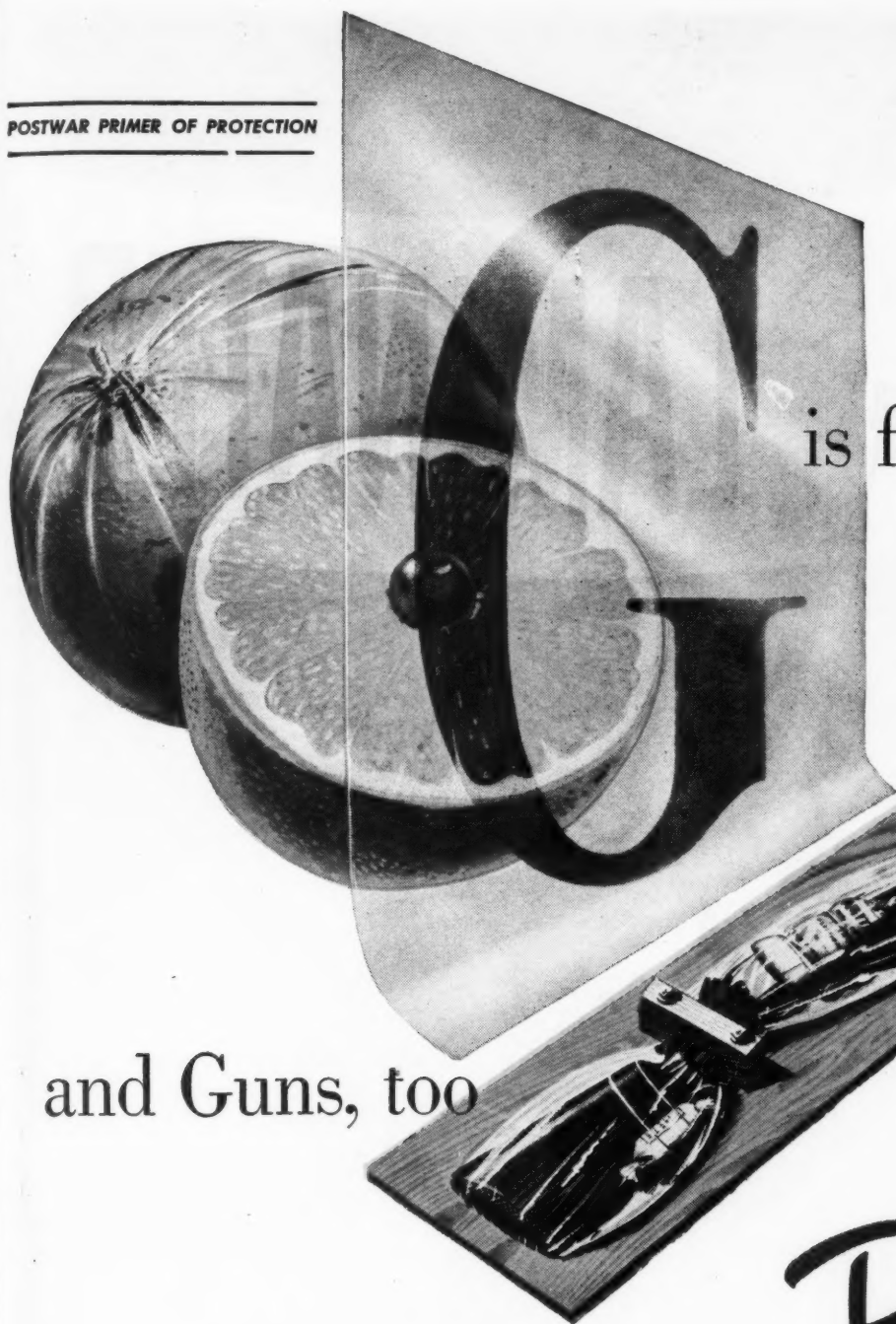


ARMSTRONG'S GLASS

and

ARMSTRONG'S CLOSURES





is for Grapefruit

— held at peak of juicy ripeness for months in **PLIOFILM** — because it seals moisture *in!*

and Guns, too

protected from mold and corrosion by packing, with a desiccant, in **PLIOFILM** — because it seals moisture *out!*

SOON — we hope — many products will reach the public in better condition than ever before, surety-sealed against spoilage in **PLIOFILM**. ★ For wartime experience has proved that this gleaming transparent wrapping provides an impenetrable barrier to moisture — seals it *in*, or locks it *out* — keeps it where it belongs. ★ Best proof of that has been the military use of Goodyear's entire **PLIOFILM** production on airplane engines and other military items, to protect them from corrosion in transit overseas. ★ That is why none can yet be spared for marketing tree-ripened fruits out of season — or to keep cigars moist, drugs dry and foods fresh. ★ But that day is coming, and alert manufacturers are already designing new **PLIOFILM** packages that will safeguard the quality of their products at point of sale. For information, write Goodyear, Chemical Products Division, Pliofilm Sales Dept., Akron 16, Ohio.

Pliofilm

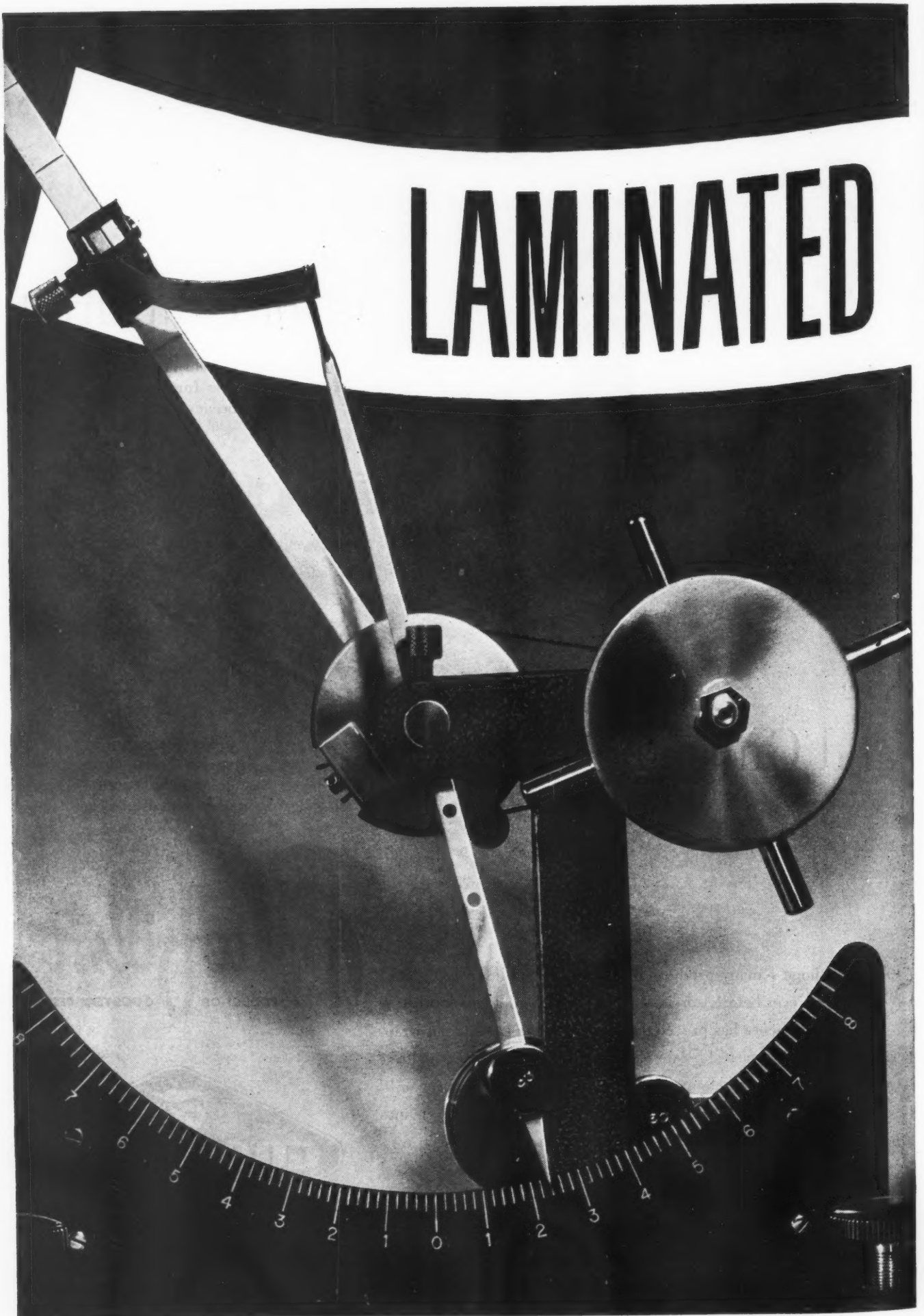
A PRODUCT OF GOODYEAR RESEARCH



KEEP BUYING WAR BONDS—FOR KEEPS

*Plio*film — T. M., The Goodyear Tire & Rubber Company

LAMINATED



FOIL *goes on a Bender!*

"Nothing can be left to chance!" That is the watchword at Reynolds.

In the packaging laboratory each new problem is answered only after exhaustive tests have been made on every possible material and method.

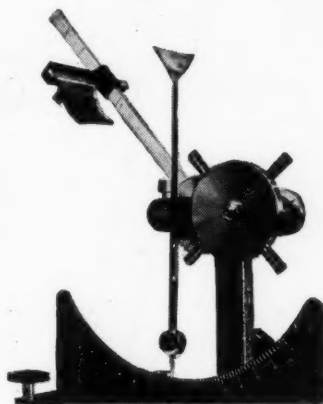
This machine calculates the stiffness of foil, paper, laminations. One small test among hundreds!

There are twelve highly specialized departments in Reynolds completely equipped, modern packaging laboratory . . . dedicated now to the aim of developing better packaging to help hasten final victory in the Pacific.

The needs of war have brought about packaging miracles! Undreamed of improvements have been made in the rolling, laminating and sealing of foil materials.

If you are interested in knowing how these new developments can help deliver your products to the public in better condition and with greater sales appeal than ever before—Reynolds technicians will be glad to tell you.

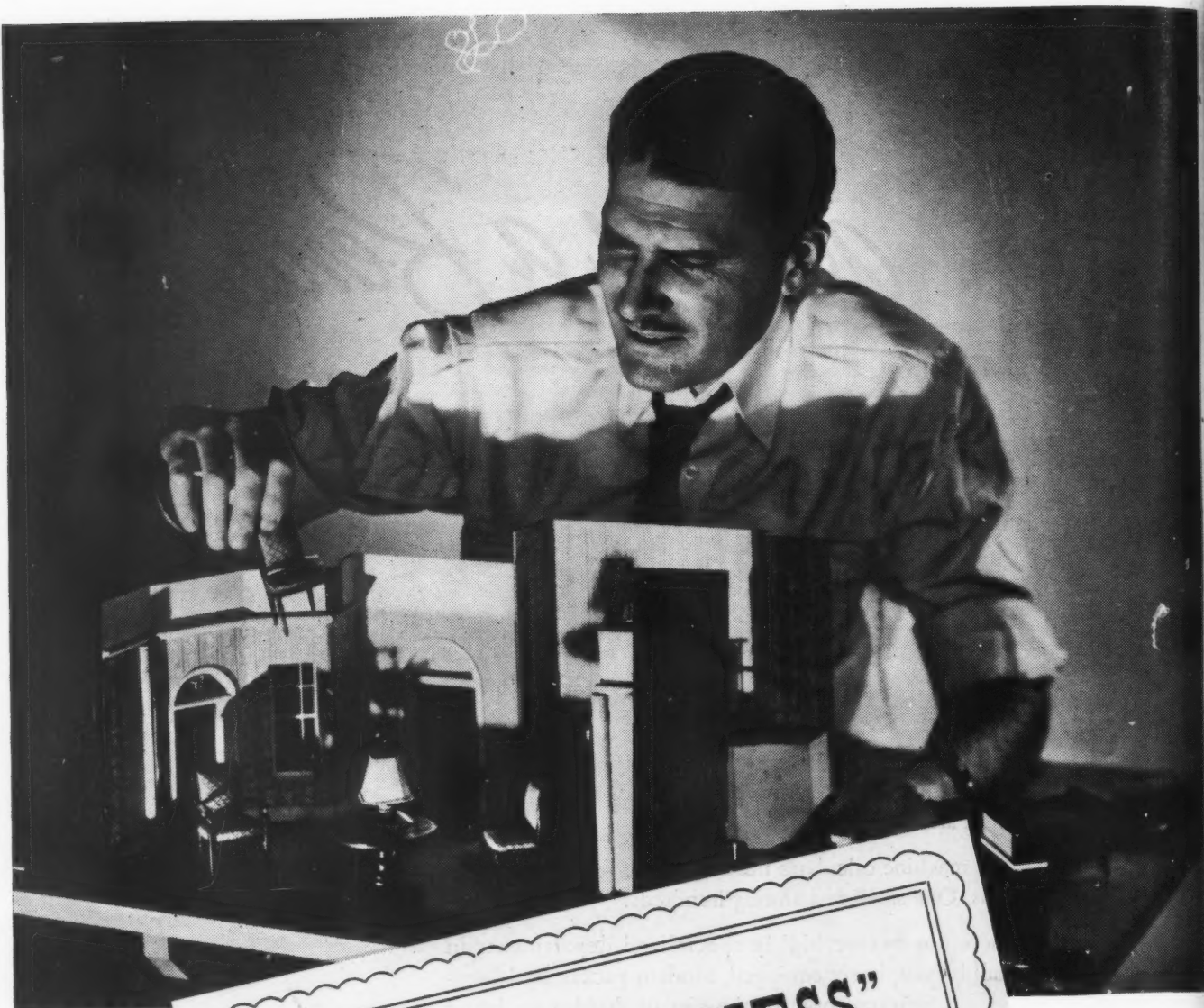
Address inquiries to: Reynolds Metals Company, Reynolds Metals Building, Richmond 19, Virginia. For 25 years the world's largest producer of foil!



REYNOLDS METALS COMPANY

Leads the way in Foil Labeling





"SHOW BUSINESS"

No matter how brilliant the script,
how fine the cast, a practical,
eye-appealing set is necessary
to the production's success.

Sales-wise packers know that their
products deserve an attractive setting.
They pack in efficient, eye-appealing
Hazel-Atlas glass containers.



HAZEL-ATLAS GLASS COMPANY • Wheeling, W. Va.



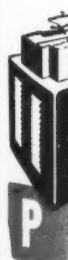
the ermine of package wraps

Champion Kromekote

THE CHAMPION PAPER AND FIBRE COMPANY • HAMILTON, OHIO

B

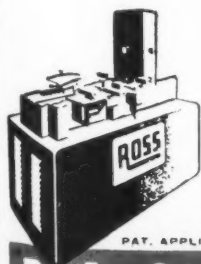
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- *Engineering*
- *Experience*
- *Production*

With ROSS all three are essential to give you the finer, more versatile packaging machinery. ROSS packaging machines are constructed entirely from Standardized high precision parts made to close tolerances. An experienced engineering and designing staff, skilled workmen, modern plant facilities, mean to you the finest in packaging machinery. Look to ROSS for assistance in your packaging problem. Write for complete information today.



A. H. ROSS *Co.*

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PACKAGING MACHINERY

new
and
BETTER

Patents Applied for

The new transparent pressure sensitive tape of a million uses in industry and packaging.

PAX TAPE is a superior product made according to a new formula and by a new process.



- Edges always remain dry
- Need not be stored in metal boxes
- Rolls never telescope
- Keeps indefinitely

PAX TAPE is made on cellophane for average use; on acetate for waterproofness and insulation.

Available in large range of colors.

PAX TAPE meets Government specifications.

Ask for free sample roll of Pax Tape for experimental purposes and tests.

A PRODUCT OF

THE COFAX CORPORATION

NEW YORK OFFICE:

50 EAST 42ND STREET, NEW YORK 17, N. Y.

IMPULSE
SALES

How to win your share of this profitable "no man's land"

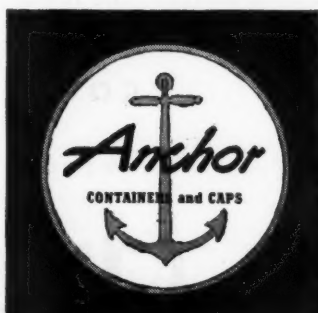
Every careful market analysis reveals a broad strip of "impulse" sales between your share of business and competition's share. The best way to clinch this profitable business is to let your product *sell itself* in a clear, clean Anchorglass package!

Sight of the product stimulates the shopper—invites use—and so creates desire. Even where visual appeal may not be a factor, shoppers know that glass is most honest, most sanitary, most convenient.

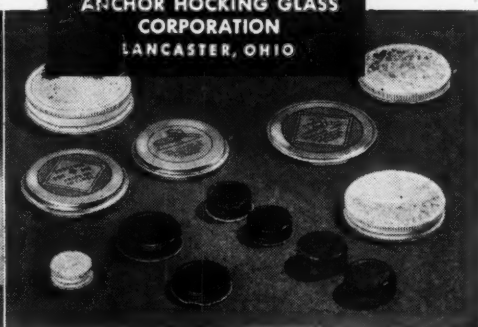
Add the fact that Anchorglass Containers and Anchor Caps are fast handling in production, and you have the perfect postwar package. There's an Anchor Container and Closure to keep *your* product fresh and convenient to use 'till the last bit is gone.

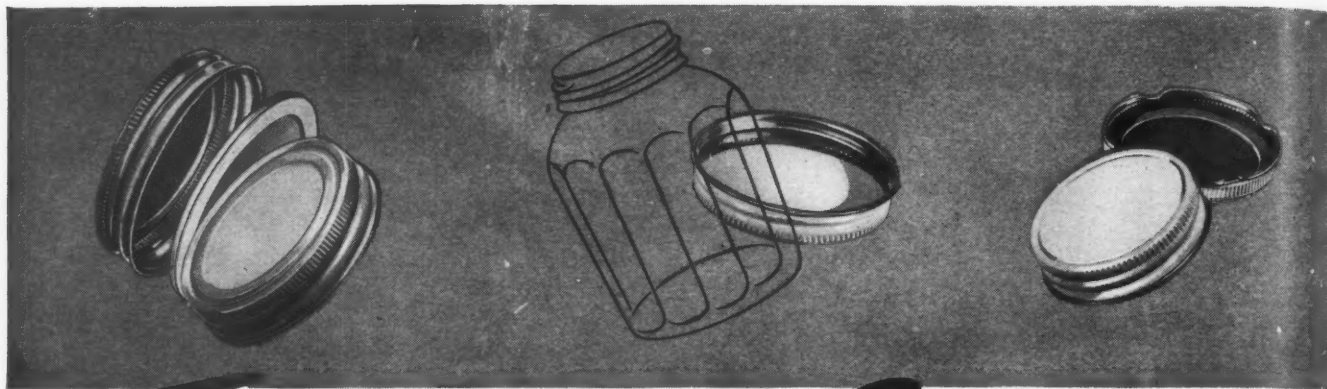


Hear how Anchor Hocking is educating millions of your customers and retailers every week to the advantages of modern glass packaging—"Meet Corliss Archer" every Thursday evening, entire Coast-to-Coast Network, CBS.



PRODUCTS OF
ANCHOR HOCKING GLASS
CORPORATION
LANCASTER, OHIO





Facilities and Service

THAT JUSTIFY YOUR CONFIDENCE

Dealing with this large and experienced organization offers you these assurances of a satisfactory source of closures:

1. The right type of closure and the proper liner for your particular product.
2. Adequate manufacturing facilities to supply your needs in any quantity.
3. Adequate facilities to create and lithograph modern designs that make your caps harmonize with your package.
4. Specialized knowledge and long experience to help you solve difficult sealing problems.
5. A reputation for quality and dependability, built by many years of actual performances.

Crown's facilities, experience and reputation have made this company "sealing headquarters" for many of the foremost packers of food, drug, cosmetic and household products.

CROWN CORK & SEAL COMPANY

Closure Division • Baltimore 3, Md.

WORLD'S LARGEST MAKERS OF METAL CLOSURES

CROWN CLOSURES



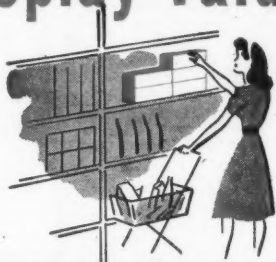
GIVE YOUR PACKAGE THE I.Q. TEST

Requirements for Impulse Quota

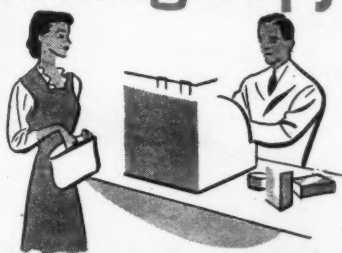
color



display value



selling copy



eye appeal



brand identity



Your package must have these vital ingredients to be self-selling in a market where products will have to sell themselves! Each factor is a powerful entity... carefully built into the final design by expert artists and designers. Make sure the consumer will "Obey that impulse" by giving your package this I.Q. test... make doubly sure by educating your package at MILPRINT!



★ AWARDED TO MILPRINT INC.
WAR PRODUCTS DIVISION

MILPRINT Inc.

PACKAGING / CONVERTERS / PRINTERS / LITHOGRAPHERS

PLANTS:
MILWAUKEE • PHILADELPH
LOS ANGELES • TUCSON

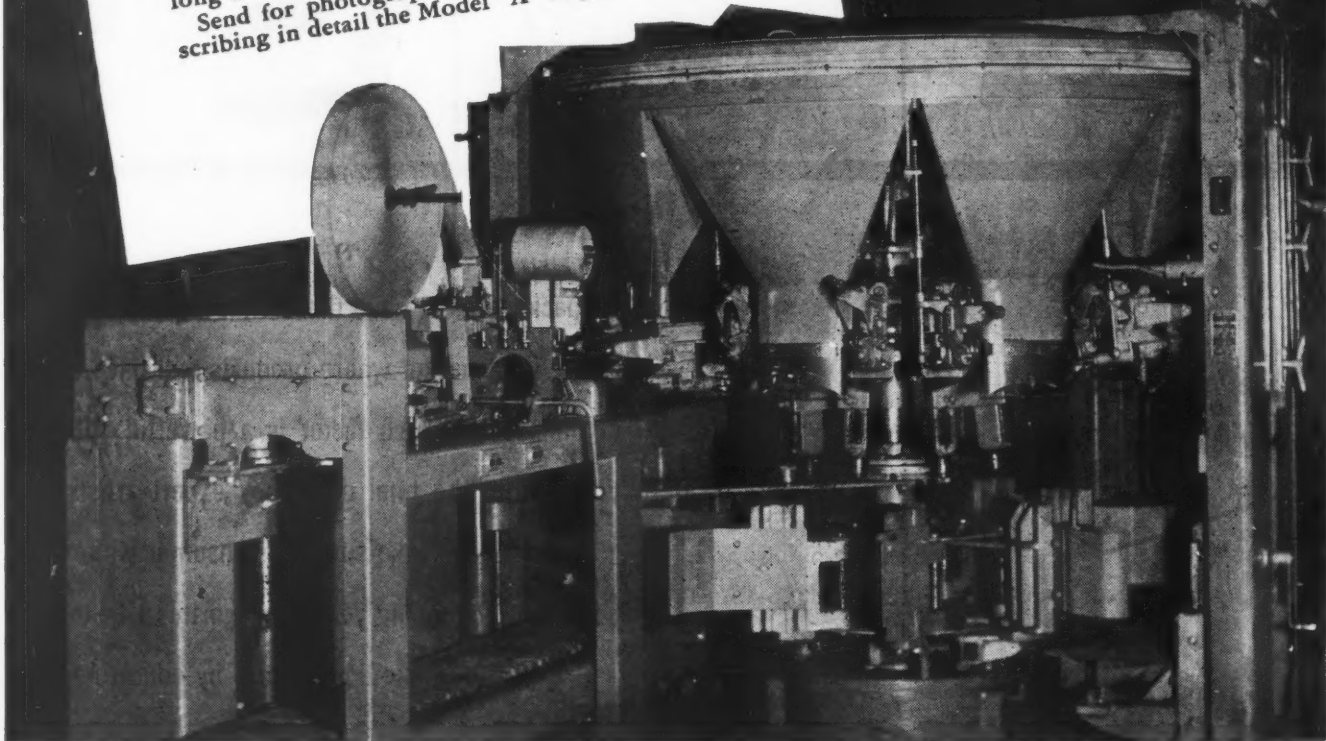
Sales Offices at:
New York • Chicago • San Francisco • Philadelphia • Minneapolis
Boston • Grand Rapids • Los Angeles • Cleveland • Cincinnati
Dallas • Atlanta • Pittsburgh • St. Louis • Indianapolis • Kansas City

Fills 100 lb. Bag Every 4 Seconds!

The Model "A" Bagpaker is a full cycle bagging machine that automatically weighs the charge, fills, sews, and seals fifteen 100 lb. multiwall paper bags per minute with only one operator. It is also available for 25 lb. and 50 lb. bags.

An additional Model "A" is now being installed in one of the country's largest chemical plants. Another is being shipped to England to be used for packing 112 lb. paper bags in the sugar industry in that country. English engineers sent here to observe American packaging systems selected the Bagpak Method after long observation and study.

Send for photograph and illustrated brochure describing in detail the Model "A" Bagpaker.



INTERNATIONAL PAPER PRODUCTS DIVISION

International Paper Company

220 EAST 42ND ST., NEW YORK 17, N. Y.

BRANCH OFFICES: CHICAGO • CLEVELAND • BALTIMORE • PHILADELPHIA • ATLANTA • ST. LOUIS • PITTSBURGH

Agents for

Bagpak, Incorporated

George & Sherrard Paper Company



* Trade Mark
reg. U. S. Pat. Off.



ONE-MAN PACKAGE

EASY TO HANDLE

THESE CRACK-PROOF WAX "OVERCOATS" STAY...

*Flexible for Packaging
Frozen Foods!*



● Vitally important in protecting frozen foods is the need for moisture-proof packaging that remains flexible at low temperatures.

Microcrystalline waxes by Socony-Vacuum give you these essential characteristics. Used as a coating for paper, glassine and paper board, these fine particle waxes form tough, durable films that keep frozen foods fresh because they keep moisture *in*. They do not flake or chip at the low temperatures encountered, and they stand up under rough handling.

Right now, these waxes are under Government allocation and are difficult to obtain for civilian packaging. But post-war, they'll be available in volume for packaging everything from precision metal parts to frozen beefsteaks.

Meantime, get performance facts and figures about them from your Socony-Vacuum Representative.

**CALL IN SOCONY-VACUUM PROCESS PRODUCTS
RESEARCH AND SERVICE**

**SOCONY-VACUUM
OIL CO., INC.**

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Standard Oil of New York Div.
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Chicago Div. • Lubrite Div. • Wadhams Div.
Magnolia Petroleum Company
General Petroleum Corp. of California



G. P. BARRIER WRAP

(Grade A, Type II)

NOW AVAILABLE!

Production has been increased to make this possible. Previously, equipment could handle direct military requirements only.

G. P. BARRIER WRAP exceeds the most recent specifications for Grade A, Type II paper (JAN-P-121 and AN-P-12b). A rugged body stock supports a continuous heat-sealable film. Resistance to turpentine penetration more than double the highest standard—real insurance against any run-off or leakage of anti-corrosive compounds.

For packaging "To Go Around the World", Grade A paper is used next to machined or polished surfaces. Packaging Methods I, Ia, and II (ASF Manual

406) all have places for a wax-free Grade A, Type II material.

G. P. BARRIER WRAP offers more in reliability! From manufacture of raw pulp to finished product, all operations are conducted under one roof with complete, continuous control over each step.

Real personal help and samples of G. P. BARRIER WRAP are yours for the asking. Minimum order, 2,500 square yards in sheets or rolls. Shipments made direct from mill to producers of war materiel on priorities and contract numbers only. For prices and delivery, write or phone at our expense, outlining sizes and quantities needed.

New grades are in the laboratory stage. Can we develop one especially for you?

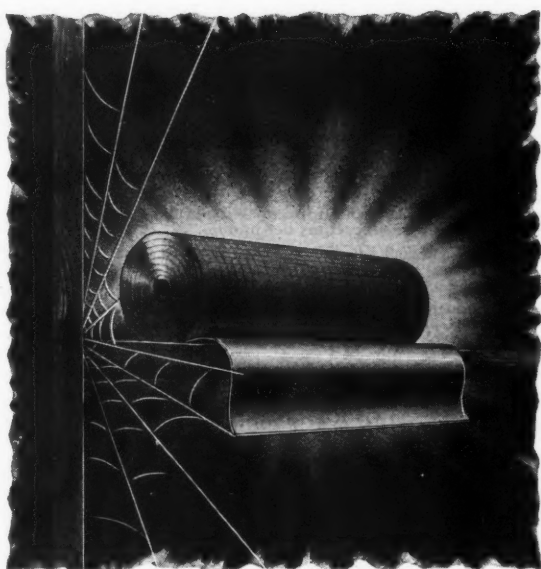


REINHOLD-GOULD, Inc.

535 FIFTH AVENUE, NEW YORK 17, N. Y.

PLASTIN*

AND ITS REMARKABLE
RESISTANCE TO AGING



PLASTIN IS NEW. Ratings of "excellent" have consistently resulted from laboratory aging tests. Of the thousands of yards of Plastin which have been in actual use, none has shown any sign of failure due to aging.

Add Plastin's unusual thermal characteristics, high strength, and complete moisture-vapor resistance and you will readily understand why it is hailed as a great victory in the battle against corrosion.

To learn more about Plastin, which surpasses all Type I barrier requirements for maximum load limits under Method II packaging, ask for "An Introduction to Plastin". This file-size folder contains a description and small samples.

PLASTIC FILM CORPORATION

PHONE: LEXINGTON 2-5458 • 475 FIFTH AVE., NEW YORK 17, N.Y.

PLASTIC FILM CORPORATION
475 Fifth Avenue
New York 17, New York

Gentlemen:

Please send a free copy of "An Introduction to Plastin" to:

NAME _____ TITLE _____

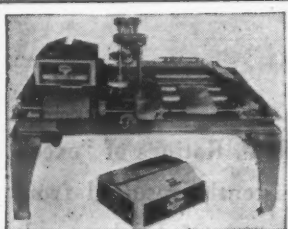
COMPANY _____

ADDRESS _____

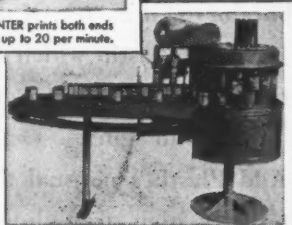
*Patents Pending
Trade Mark Reg. U.S. Pat. Off.

FILL OUT AND
MAIL TODAY!

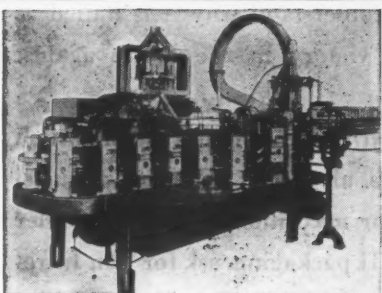
TO HELP YOU SPEED YOUR PRODUCTS ON THEIR WAY....



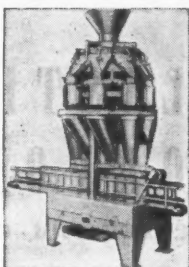
PACKOMATIC CASE IMPRINTER prints both ends of the case simultaneously, up to 20 per minute.



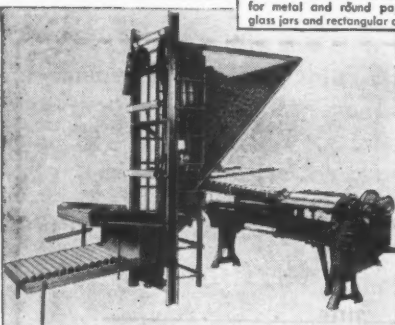
AUTOMATIC TELESCOPING VOLUMETRIC FILLER for handling semi- and free-flowing products.



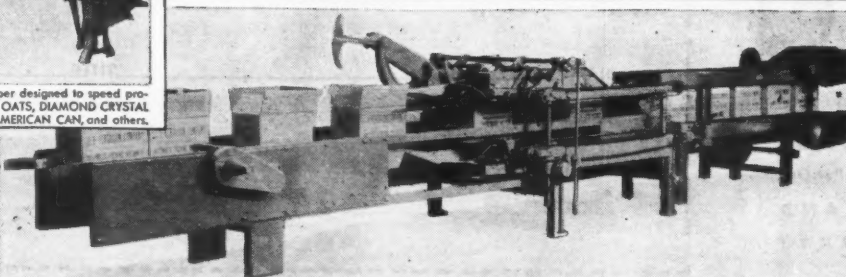
PACKOMATIC COMBINED TOP AND BOTTOM CARTON SEALER with automatic carton feeder and volumetric filler seals both top and bottom flaps automatically. Operating speed, 60 cartons per minute.



AUTOMATIC NET WEIGHT SCALE for metal and round paper cans, glass jars and rectangular containers.



AUTOMATIC TUBE CUTTER with elevator hopper designed to speed production from 70 to 100%. Used by QUAKER OATS, DIAMOND CRYSTAL & LESLIE SALT COMPANIES, SWIFT & CO., AMERICAN CAN, and others.



NEW, STREAMLINED, MODERNIZED MODEL D PACKOMATIC CARTON SEALER seals both carton tops and bottoms on one machine—or tops or bottoms only if desired. Portable or stationary models are available to handle regular corrugated or fibre shipping containers at various speeds.

From PACKAGE FILLING to CONTAINER SEALING Consult PACKOMATIC

A quarter century of proven packaging experience in the plants of America's foremost producers is yours when you specify packaging machinery engineered, designed and built by PACKOMATIC. Address inquiries to PACKOMATIC, Joliet, Illinois, or to any of its conveniently located branch offices.

PACKOMATIC packaging equipment includes everything from package forming and filling machines to case sealing machines. It includes net weighing equipment, case numberers and imprinters, and dating (coding) machines. Typical PACKOMATIC equipment (illustrated herewith) includes:

PACKOMATIC AUTOMATIC TELESCOPING VOLUMETRIC FILLERS handle semi- and free-flowing products.

PACKOMATIC COMBINED TOP AND BOTTOM CARTON SEALERS with **AUTOMATIC CARTON FEEDERS** AND **VOLUMETRIC FILLERS**, seal both top and bottom flaps automatically, operate at speeds up to 60 cartons per minute.

AUTOMATIC NET WEIGHT SCALE for round metal and paper cans, glass jars and rectangular containers.

PACKOMATIC CASE IMPRINTERS that print both ends of the case simultaneously up to 20 per minute.

AUTOMATIC TUBE CUTTERS with elevator-hopper, designed to speed production from 70 to 100 percent.

NEW AND STREAMLINED MODEL "D" PACKOMATIC CASE SEALERS that seal both case tops and bottoms on one machine—or tops or bottoms only, if desired.

PACKOMATIC AUTOMATIC WEIGHERS (not illustrated) for flour and similar products.

Builders of PACKOMATIC packaging equipment to meet each and every packaging situation, J. L. Ferguson Co. gives you:

- (1) seasoned packaging advice and counsel,
- (2) experienced package design and engineering,
- (3) practical equipment building and installation.

Contact your nearest PACKOMATIC branch office. You'll find listings in your metropolitan classified directory. For better package handling tomorrow, consult PACKOMATIC today.

PACKOMATIC

PACKAGING MACHINERY

J. L. FERGUSON CO. JOLIET, ILL.

NEW YORK • CHICAGO • BOSTON • CLEVELAND • DENVER • LOS ANGELES
SAN FRANCISCO • SEATTLE • PHILADELPHIA • BALTIMORE



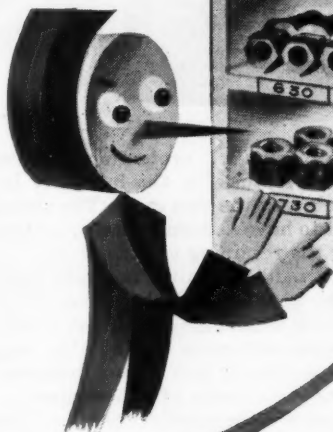
Tape masks everything except the parts to be plated—keeps plating off frames—and speeds entire operation.



Tape protects precision-tooled surfaces against scratches, dents and corrosion in storage, handling and shipping.



Tape prevents unraveling of cable and metal hose ends—eliminates waste and time of re-cutting ragged ends.



Printed tapes carry parts numbers—colored tapes further identify and speed the accurate handling of parts.

Tape saves minutes by the millions

Many industries say that FILMONIZE Tapes save more minutes, more money. They've proved FILMONIZE by laboratory test and by actual use. They find that FILMONIZE is carefully engineered to do its present jobs better. And that new types of FILMONIZE are constantly being planned and engineered to fit special needs of special tape jobs.

Is there a problem in your plant that one of our tape engineers can help you solve? If so, just drop us a line and we'll send him over.

Meantime, ask your local distributor to acquaint you with the FILMONIZE line—Transparent Tapes, Colored and Multi-Colored Tapes, Printed Tapes, Riveting Tapes, Identifying Tapes, Splicing Tapes, Acetate Fibre Tapes, Metal Tapes, Specialty and Packaging Tapes. They come in widths of ½" to 18".

Filmonize
TRADE-MARK REG.

SELF-SEALING TAPES

INTERNATIONAL PLASTIC CORPORATION
Morristown New Jersey





**ONLY A TINY STAPLE
... BUT VITAL**

These fibre "cans"...protecting artillery shells... were sometimes stuck by the humidity in the South Pacific... delaying the gun crew. The container manufacturer had to have... immediately... a better method of fastening the retaining collar.

A Bostitch field specialist not only gave a definite answer to the problem quickly... one hand, one blow, with a Bostitch self-feeding hammer... but by borrowing from other customers was able to supply enough "oversold" equipment that same afternoon.

This... and thousands of other cases... illustrates how important are the smallest details... how this war in foreign lands reveals the vital importance of proper packing and shipping... how often the solution to a fastening problem is the application of some well-proved principle.

Bostitch field men... specializing exclusively in stapling... backed by forty years' engineering and manufacturing experience... will help you select... from nearly 800 models... the right Bostitch machine to fasten metal, plastics, wood, paper, cloth, rubber... in any combination.

Write for Folder B132 or information on any fastening application.

Bostitch (Boston Wire Stitcher Company) 54 Duane Street, East Greenwich, R. I. (or Bostitch-Canada, Ltd., Montreal).

Bostitch Staples in most sizes
are now available.



BOSTITCH

*AND FASTER
fastens it better, with wire*

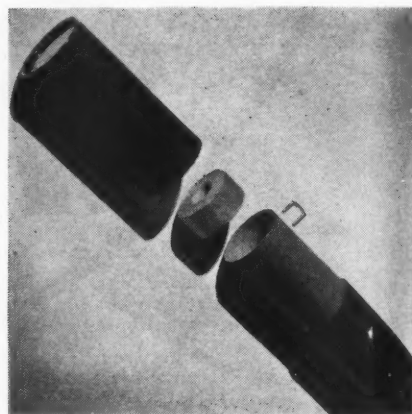
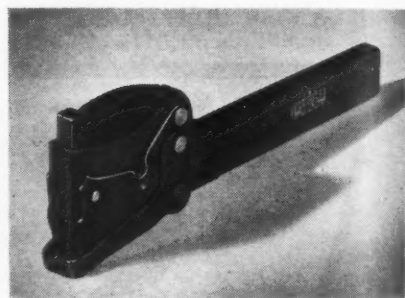
ALL TYPES OF STAPLES APPLIED BY MACHINES
ALL TYPES OF MACHINES FOR APPLYING STAPLES

PROTECTIVE PACK- AGING PROVED IN WAR

● This war is "packaged" at home... and "delivered" thousands of miles away. No war before ever saw such difficulties of supply—so many men fighting so far from home. Getting equipment, ammunition and food to those men—in perfect condition despite transportation handicaps—called for "miracles" in packing and shipping.

Yet some of the "miracles" were performed merely through the application of some commonplace packaging principles. One such case is described on this page.

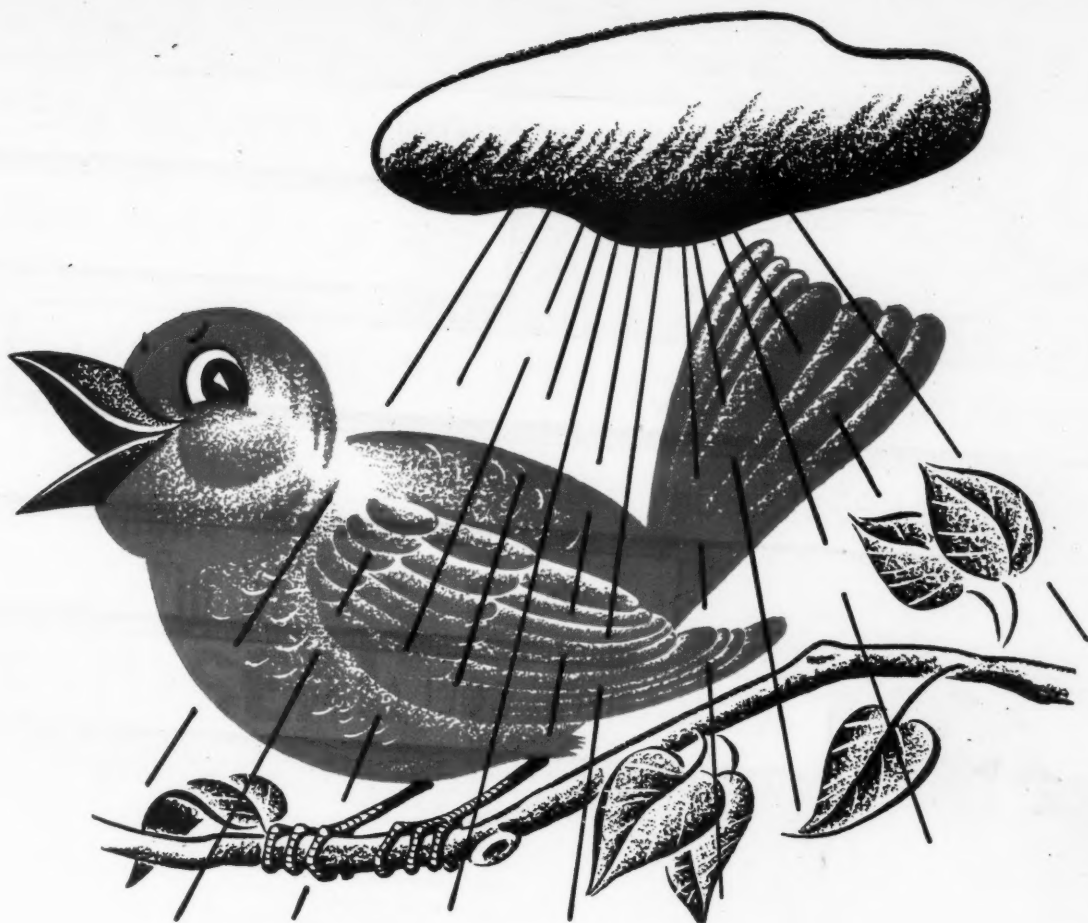
The photograph below shows how this shell container is constructed. An internal collar into which the nose of the shell is fitted, is stapled to the inner tube of the container. In some cases, a single staple is sufficient to hold the collar securely in position.



The tool used is the Bostitch Self-Feeding Hammer, which drives a staple like a two-pointed tack, delivering a powerful driving force with only a short wrist motion. Each stroke drives a staple as fast as the operator can swing.

This and many other cases in the files of Bostitch wartime applications illustrate the importance of *protective* packaging. Military authorities recognize that a delivery is successful only if the shipment arrives in usable condition; it is safe to predict that, for ordinary commercial purposes, more and more attention will be paid in the future to protective packaging.

And since the successful package is the one that combines protection with *efficiency*, it is also safe to predict an increasing use of Bostitching. In addition to providing a fastening which, in many cases is more secure and resistant to the hazards of rough handling and weather, Bostitching often offers a time saving over other fastening methods. For further information we suggest you send your fastening problem—an actual sample, if possible—to Bostitch for study and recommendation.

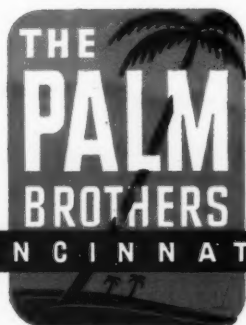


His **COLOR** *never fades*

Whether it rains or shines, his color always sparkles, always attracts.

Palm Brothers Decals too, have that quality of permanency that enable your sales messages to sparkle and attract under conditions that tend to obliterate other forms of identification.

Easy to use on any commercial surface, economical to buy, Palm Brothers Decals are your guaranteed marks of success.



Decalomania Co.

C I N C I N N A T I . . 1 2 . . . O H I O . . U . S . A .

Write today for your
free copy of new
Bulletin No. 352.



TODAY -- PROTECTION • CONVENIENCE •

FOR VITAL WAR AIDS •

TOMORROW -- PROTECTION • CONVENIENCE AND

APPEAL FOR YOUR PEACE-TIME PACKAGES •

CREAMS • PASTES • POWDERS •

WITH WIRZ COLLAPSIBLE METAL TUBES

Tomorrow's peace is sure to bring a shift of emphasis from protection and convenience to appearance of packages. WIRZ Collapsible Metal Tubes can help you negotiate the shift smoothly, easily and without loss of an iota of protection or convenience for your product.

Basically protective and convenient in design, WIRZ Collapsible Metal Tubes will take beautifully the decoration or embellishment designed to demand the attention of critical buyers in the coming highly competitive peace-time markets.

Pre-war, A. H. WIRZ, Inc., long experienced in the manufacture of collapsible metal tubes and in tube decoration, cooperated with manufacturers of national products in developing sales-winning packages. As the peace era approaches, A. H. WIRZ, Inc. looks forward to cooperation with you to meet modern competition on all three fronts, *protection, convenience and appearance.*

Today, much of our production is required for military orders, but we will gladly plan with you for Tomorrow's markets.

New York 17, N.Y. Chicago 4, Ill. Memphis 2, Tenn. Havana, Cuba
30 E. 42nd St. 80 E. Jackson Blvd. Wurzburg Bros. Roberto Ortiz Planos

A. G. Spilker { Los Angeles 14, Calif., 1709 W. 8th St.
Exposition 0178—Also Danville, Calif.

Established 1836
A. H. WIRZ, INC.
CHESTER, PA.

Export Division—751 Drexel Bldg.
Philadelphia 6, Pa.

COLLAPSIBLE METAL TUBES • SOFT METAL TUBING • LACQUER LININGS • WAX LININGS •
WESTITE CLOSURES • HOUSEHOLD CAN SPOUTS • APPLICATOR PIPES • COMPRESSION MOLDING

World-Famous Flavor Sealed in by CEL-O-SEAL

THE RECIPE that produces the world-renowned flavor of "Angostura Bitters" is a secret known only to the makers. But it's easy to see how that flavor is protected. A Du Pont CEL-O-SEAL* cellulose band seals the closure, guarding against leakage, evaporation and substitution.

CEL-O-SEAL bands effectively prevent loss of quality during distribution . . . and they create good will with the consumer because they are quickly and easily removed. Available in attractive colors and color combinations, CEL-O-SEAL bands can be indelibly printed with trade mark or advertising message so that they also serve as an eye-catching second label.

Today, as you plan your packages of tomorrow, keep CEL-O-SEAL in mind. Write for full information.

*Trade Mark

CEL-O-SEAL bands and WIND-O-BAND* seals are sold by: E. I. du Pont de Nemours & Co. (Inc.), "Cel-O-Seal" Section, Empire State Bldg., New York City 1 • Armstrong Cork Company, Glass & Closure Division, Lancaster, Pa. • I. F. Schnier Company, 683 Bryant Street, San Francisco 7, Cal.

PLEASE RETURN EMPTY CEL-O-SEAL BAND CONTAINERS! Ship collect to E. I. du Pont de Nemours & Co. (Inc.), c/o Jewett Refrigerator Co. (Inc.), 2 Letchworth Street, Buffalo, New York. You'll receive OPA ceiling prices . . . and you'll be helping us fill your future orders promptly.

Buy Bonds to Bring V-J Day Closer



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

DU PONT CEL-O-SEAL BANDS

FOLLOW THROUGH **FOR BEST SCORING**

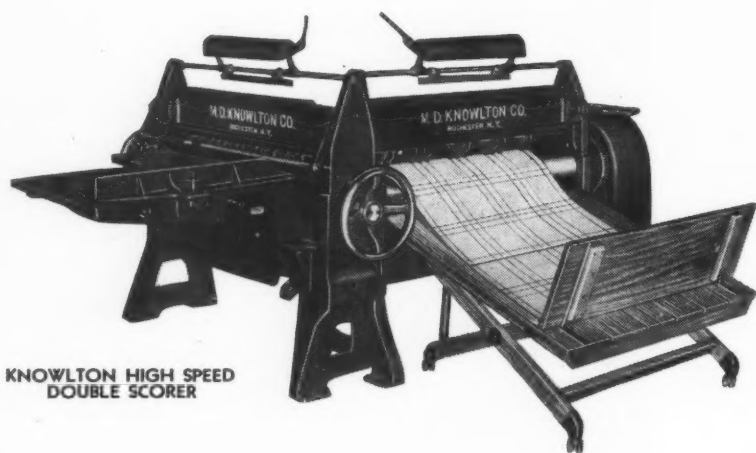
THE best scoring golfers—those who beat par—are the ones who follow through. Paper box craftsmen know that unless they follow through with good scoring, their containers will be below par. Wherever the Knowlton High Speed Double Scorer has been used, it has met every demand for fast, accurately scored box blanks.

The up-to-the-minute mechanical improvements incorporated in this ruggedly constructed precision machine assure high production at low cost.



Three superior features of the Knowlton High Speed Double Scorer insure accuracy and absolute uniform depth of scoring:

1. Weights have been distributed by the excellent design of the rugged base and extra-heavy reversible knife bars.
2. Large 9" diameter scoring rolls, with their trunnions (shafts) cast integral, are set in Timken Roller Bearings.
3. Independent adjustable feed control equalizes sheet pull.



**KNOWLTON HIGH SPEED
DOUBLE SCORER**

➔ *Request our Bulletin No. 94 which explains why you can't afford to overlook the improved production and low operating cost features of this precision machine.*



Complement to Loveliness



Pond's picked a BEETLE* plastic package for their new "Make-up Pat." Why? Here was color to carry out design ideas. Smooth, velvety texture to please feminine fancy. Light weight for handling and carrying. Surface that wouldn't mar or scratch. Chemical inertness to protect a delicate cosmetic. All in all, a perfect package—in BEETLE plastic!

If you're looking for just such qualities in a packaging material, consult Cyanamid or your molder on colorful BEETLE. It can be readily adapted to your own product requirements. *Reg. U. S. Pat. Off.

Dainty BEETLE containers add sales appeal and customer satisfaction to "Make-up Pat," Pond's new cake foundation. The cases are molded by Waterbury Companies, Inc.

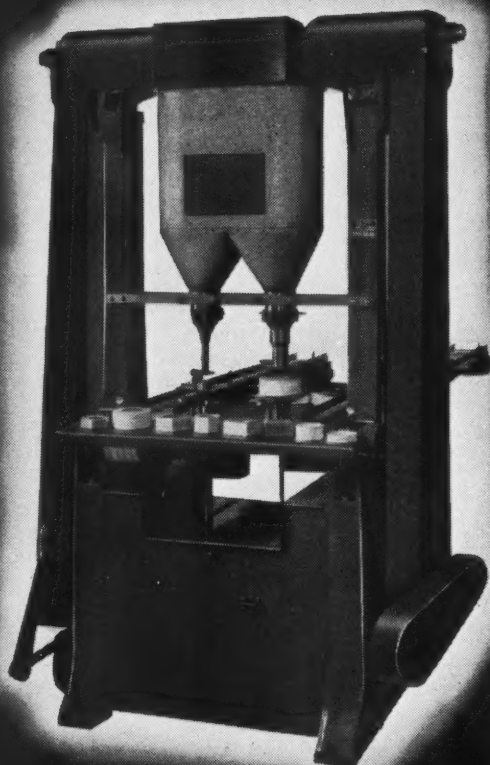
Cyanamid Plastics



Beetle Melmac • Melurac
Laminac • Urac

AMERICAN CYANAMID COMPANY • PLASTICS DIVISION • 34B ROCKEFELLER PLAZA • NEW YORK 20, N. Y.

MODEL
MH
 "BOND"
Semi-automatic
**VOLUME FILLER,
 WEIGHER OR
 PACKER-WEIGHER**



For Face Powder, Talcum, Flour, Soap Powder, Tooth Powder, Cocoa, etc.

Many manufacturers who do volume filling, gross weighing or packing have such a wide range of package types and sizes that they do not need fully automatic machines. The Model MH "Bond" Semi-automatic is just the machine for this field as it is easily converted from one package size to another. And it can be used for any type of container—either bag, envelope, carton, jar or can!

A single operator, with a single Model MH, can fill up to

50 containers per minute, with negligible variations in packed weight.

The Model MH is a twin-station semi-automatic machine. We also manufacture many other models of semi-automatic and automatic machines from single to four stations.

If you package cosmetics, drugs, chemicals, foods or cleaning powders, call on U. S. Automatic for the best machine to fill your requirements.



A representative group of samples from the McKesson & Robbins line, which is being packaged on the MH.



Send U.S. details on any of your packaging problems—we have the machines and the engineering background to help solve them.

Automatic Box Machinery Co. Inc.

Owning and Operating

NATIONAL PACKAGING MACHINERY CO. • CARTONING MACHINERY CORP.

18 ARBORETUM ROAD, ROSLINDALE, BOSTON 31, MASS.

Branch Offices: NEW YORK CLEVELAND CHICAGO
 LOS ANGELES (KRUGH EQUIPMENT & SUPPLY CO.)

KEEP IT *Dry* PACK IT *Right!*

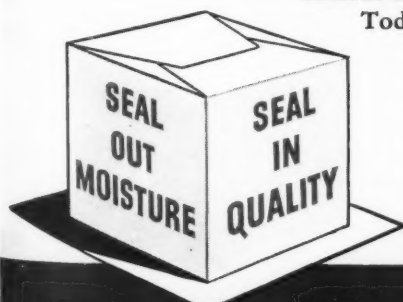


**WAR
PROVED**

WOLFE Liners make any type of shipping case or carton **WATERPROOF**—thus protecting your product from moisture hazards during shipment or storage!

Today—thousands of WOLFE-lined cases carry war cargoes safely overseas. Thoroughly proved in war shipping—WOLFE Liners offer outstanding advantages for civilian products now and in the future!

Economical...easy to use...these liners are of the sturdiest materials...using tough papers scientifically treated with the best waterproofing available. Rigid tests assure stability. Available in 3 standard styles for inside or outside use...flat style, automatic opening style, top sheet style...all sizes. Write today concerning WOLFE Waterproof Liners, special types of waterproof covers and liners, or for information on other special packing problems. Representatives in all principal cities. Robert F. Wolfe Company, Fremont, Ohio.



WOLFE *Waterproof*
LINERS



INDO-CHINA: guerrillas received weapons in paper packages. When the demands of war packaging decrease, we will be able to show you some startling new and advanced techniques to meet your peacetime needs.

CONTAINER CORPORATION OF AMERICA
CHICAGO AND 22 OTHER CITIES
SAVE WASTE PAPER



*A new big name
in
flexible packaging*

WESTERN PRODUCTS, inc.

UNUSUAL TECHNICAL FACILITIES are now offered to all industries immediately for the planning of every type of flexible package.

WESTERN PRODUCTS, INC. may be a new name to you because this company has been full blast on direct government contracts for the last few years and until now has been unable to offer you its services.

Our organization is staffed by men with proved successful backgrounds in the development, manufacture and application of all types of flexible packages for all fields of industry and merchandising.

Our design staff, too, is ready to work with you.

Western Products, inc.

160 ESSEX STREET

NEWARK, OHIO

An up-to-date summary of the properties of Celanese* Plastics

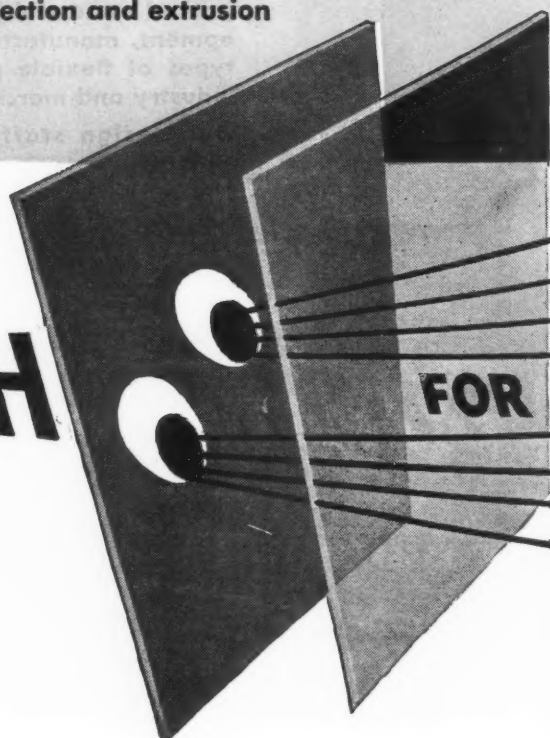
While there is no such thing as an all-purpose plastic, experience proves that the cellulosic plastics are suited to a wider range of applications than any other type. In addition to their outstanding and widely recognized advantages, recent developments and improvements in the cellulose have increased the scope of their usefulness. Within the Celanese group of cellulosic thermoplastics, there are types and formulations which offer physical properties that bracket the full range of cellulosic plastics possibilities.

TOUGHNESS Toughness in the cellulosic plastics is inherent; it is achieved without supporting filler of any kind. Among the cellulose, Celanese plastics are unexcelled for toughness.

UNLIMITED COLOR Sixty years of color experience that began with the first plastic "Celluloid" is the background for the unlimited color and accurate color control available in Celanese plastics. The result is a range of colors, configurations, mottles and color densities that is surpassed by no other group of plastics.

MOLDABILITY Moldability is an outstanding characteristic of Celanese plastics. They are adaptable to the fastest injection and extrusion as well as other molding methods.

LOOK INTO LUMARITH



EASE OF FABRICATION There are, perhaps, more fabricating methods open to Celanese plastics than to any other plastics group. They can be cut, sawed, drilled, heat formed, machined, laminated, blown...

TOUCH COMFORT Low thermal conductivity is the property that makes Celanese plastics pleasant to the touch. They are never too hot or too cold.

SURFACE PERMANENCE Clear-through color, absence of filler and good surface hardness all contribute to the surface permanence of Celanese plastics parts. Usage actually improves their lustre and appearance.

NON-REVERBERATING Celanese plastics have pronounced sound-absorbing characteristics. Molded and fabricated articles have no unpleasant clatter or ring.

HEAT RESISTANCE The ability to soften under heat without decomposing is the basis of the superb moldability of Celanese plastics. This chemical heat stability is an important part of the resistance of Lumarith plastics parts to the higher operating temperatures.

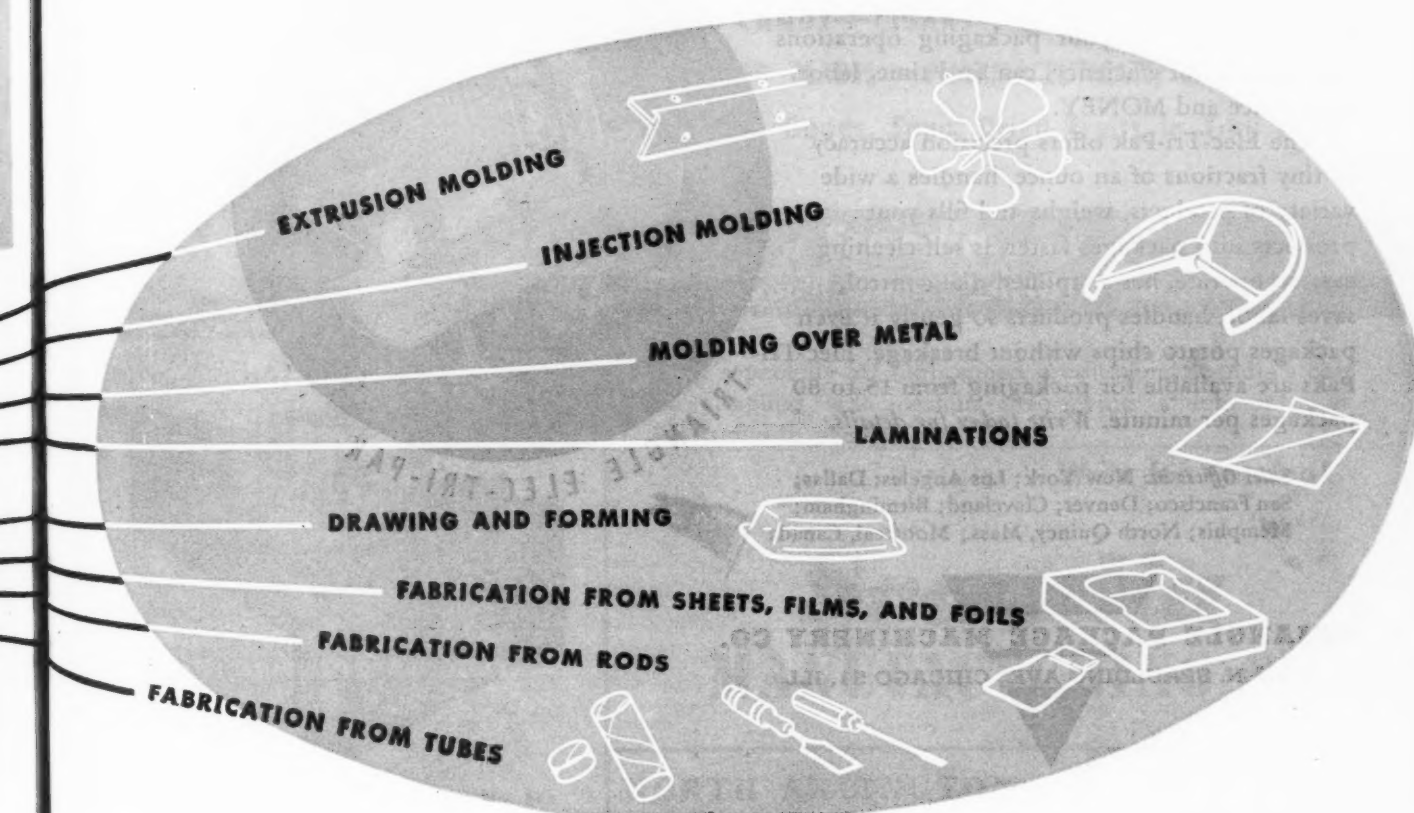
WARPAGE RESISTANCE Lumarith* EC (ethyl cellulose) is the most dimensionally stable of the cellulose. Military applications of Lumarith EC have demonstrated this stability both in the dry cold of the Arctic and the humidity and heat of the Tropics.

LIGHT WEIGHT The specific gravity of Celanese plastics formulations range from 1.07 to 1.40—lightness which permits greater bulk and consequently greater strength in many applications.

TRANSPARENCY Celanese plastics rank high in the property of transparency. Light transmission is as high as 98% of the theoretical maximum (92% absolute) for a sheet approximately .125" in thickness. Index of refraction is 1.49. The spectral transmission can be modified to include or exclude the ultra-violet rays. Celanese plastics are not subject to stress crazing that affects strength as well as transparency.

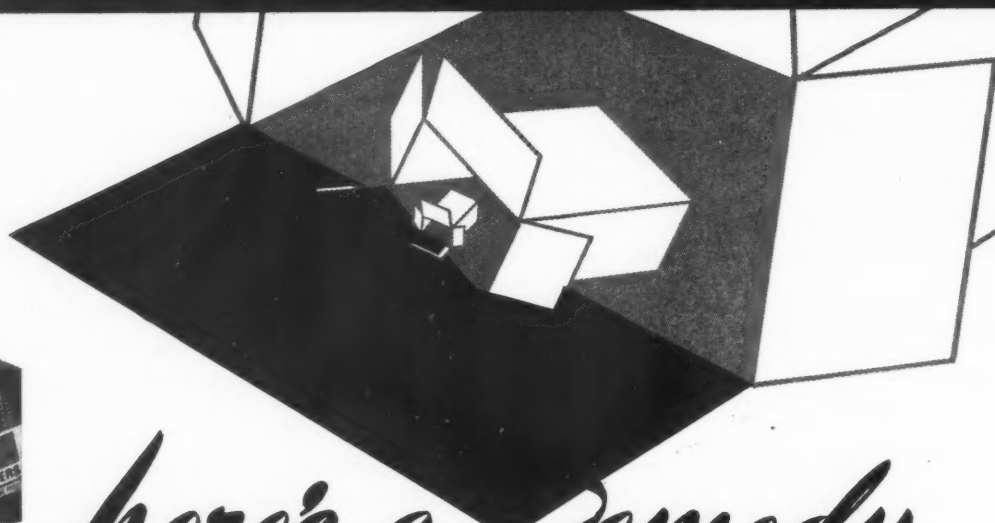
WIDE RANGE OF FORMULATIONS Success with plastics depends upon the right plastic and the right formulation. Celanese welcomes every opportunity to assist you in the selection of the right plastic for best results. Should a study of your product and problem indicate the need of other than a Celanese plastic, you can count on the Celanese technical staff and sales organization for impartial advice. Celanese Plastics Corporation, a division of Celanese Corporation of America, 180 Madison Avenue, New York 16, N. Y.

*Reg. U. S. Pat. Off.



does your packaging give you...

a headache in the pocketbook?



here's a Remedy...

YOU have to weigh your food products and fill them into packages...but...it doesn't have to be a wasteful, inefficient process any more. This Triangle Elec-Tri-Pak can transform your packaging operations into a model of efficiency, can save time, labor, floor space and **MONEY**.

The Elec-Tri-Pak offers precision accuracy to tiny fractions of an ounce, handles a wide variety of products, weighs and fills your products into packages faster, is self-cleaning, easy to operate, has simplified dial control, saves labor, handles products so gently it even packages potato chips without breakage. Elec-Tri-Paks are available for packaging from 15 to 80 packages per minute. *Write today for details.*

Sales Offices in: New York; Los Angeles; Dallas; San Francisco; Denver; Cleveland; Birmingham; Memphis; North Quincy, Mass.; Montreal, Canada

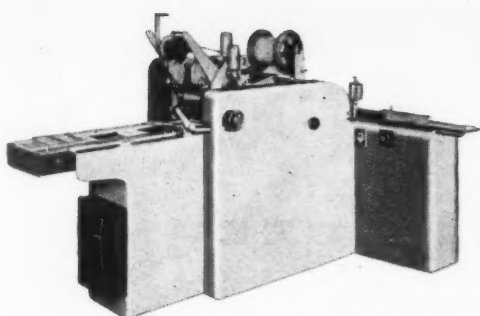


TRIANGLE ELEC-TRI-PAK

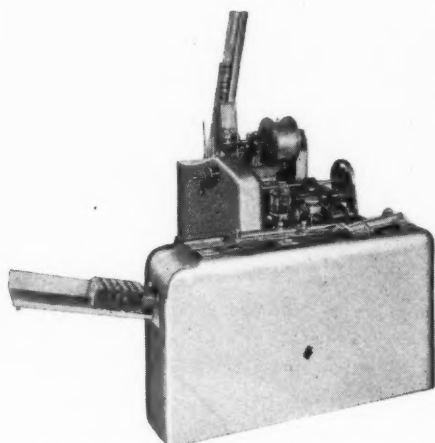


TRIANGLE PACKAGE MACHINERY CO.

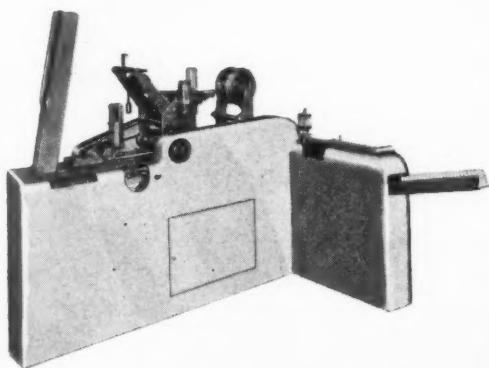
907 N. SPAULDING AVE., CHICAGO 51, ILL.



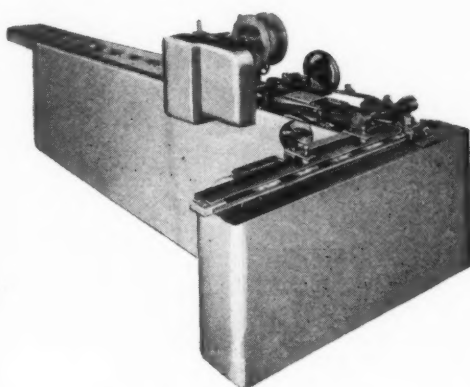
Scandia Fully Automatic Cello-wrapping machine equipped with electric eye for registering printed wraps, and tear-tape attachment.



Scandia Fully Automatic Cello-wrapping unit for general merchandise. Widely used by Tobacco Manufacturers, speed, up to 250 per minute.



Scandia Special Fully Automatic Cello-wrapping machine equipped for applying Revenue or Union Stamps and Tear-Tape.



Scandia Fully Automatic Cello-wrapping machine with long conveyor; Speed, up to 250 per minute.

perfect—trouble-free

Cello-wrapping on Scandia units

up to
250
per
min.

*Standard Units for Standard Packs
with or without Special Attachments*

FOR SEALING MOISTURE IN, or keeping moisture out, speed, and smooth, quiet mechanical operation that does a perfect job—day in and day out—for years of economical production, SCANDIA provides features that appeal to hard-headed, volume producers. That's because Scandia units are *designed* for straightaway, rhythmic performance, easy to feed, easy to adjust.

*but
fast!!*

for CANDY—CIGARS—CIGARETTES—TOBACCO
RAZOR BLADES—PHARMACEUTICALS, etc., and for
Baked Goods, Soap, Dried Fruits in Tray Packs

Watch a **Scandia** work —
and you'll want SCANDIA performance!

Built especially for high speed production, Scandia's can be supplied with certain time-saving attachments, as illustrated in photos.

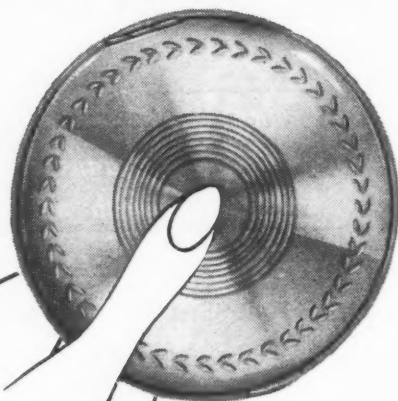
Write for Catalog!

Scandia MANUFACTURING CO.

NORTH ARLINGTON

NEW JERSEY

Beauty's ONLY SKIN DEEP!



One scratch on the bright, polished surface of this compact means *no sale*. So the wise manufacturer gives it a protective "skin" of MYSTIK TAPE from the time it leaves the production line till final purchase. MYSTIK, applied direct to the product, protects it during assembly, packaging, shipment and on the retail counter. MYSTIK can be removed and re-applied countless times without in any way affecting the bright, clean surface . . . for top sales appeal.

This is but one of the many MYSTIK features manufacturers are putting to work to solve packaging—packing—shipping problems. MYSTIK Self-Stik CLOTH TAPE can be applied direct to any fine surface—wood, plastic, porcelain, paint, metal, etc.—without harming or leaving adhesive residue on the finish.

MYSTIK protects against water, dampness, salt spray, dust, vermin, fungus. Let a sample roll of MYSTIK "sit in on" your packaging conclaves now. See your distributor or write for free offer below.

FREE—For new packaging ideas, send for free roll of MYSTIK Self-Stik CLOTH TAPE and fact-filled literature. No obligation. Mystik Adhesive Products, 2637 N. Kildare, Chicago 39.



Self-Stik Cloth and Paper Tapes, Protective and Masking Materials, Waterproof Packaging Papers, Advertising Signs and Displays, Self-Stik Stencils

KIMPAK FLOAT PACKAGING



Prevents breakage . . .

surface scratches, too

Nestled in a fluffy, cloud-soft cushion of KIMPAK*, war materials—from delicate precision instruments to huge bomber wings—are arriving at the battlefronts in fighting condition. And after victory, this modernized method of packaging will be a boon to peacetime shippers.

As flexible and easy to use as a piece of wrapping paper, KIMPAK Creped Wadding makes possible assembly-line

speed in packaging . . . saves time and work in the shipping room. Often cuts freight costs by reducing cubage.

So soft, so clean, so resilient, KIMPAK prevents mars and scratches as it protects against breakage. Available in 12 standard types, there is a kind of KIMPAK to meet almost every postwar need.

To learn more about this marvelous packaging material, mail coupon today for free illustrated book.

FREE POSTWAR PACKAGING PLAN

In making plans for your postwar product the advice of our packaging representative is yours for the asking. In most cases, he will be able to recommend a war-proved method of float packaging with KIMPAK.

Telephone, write or wire today for the KIMPAK representative.

KIMBERLY-CLARK CORPORATION
Creped Wadding Division, Neenah, Wis.

Send copy of FREE KIMPAK BOOK on postwar packaging methods. MP-845

Name

Firm

Address

Our Product is

Kimpak

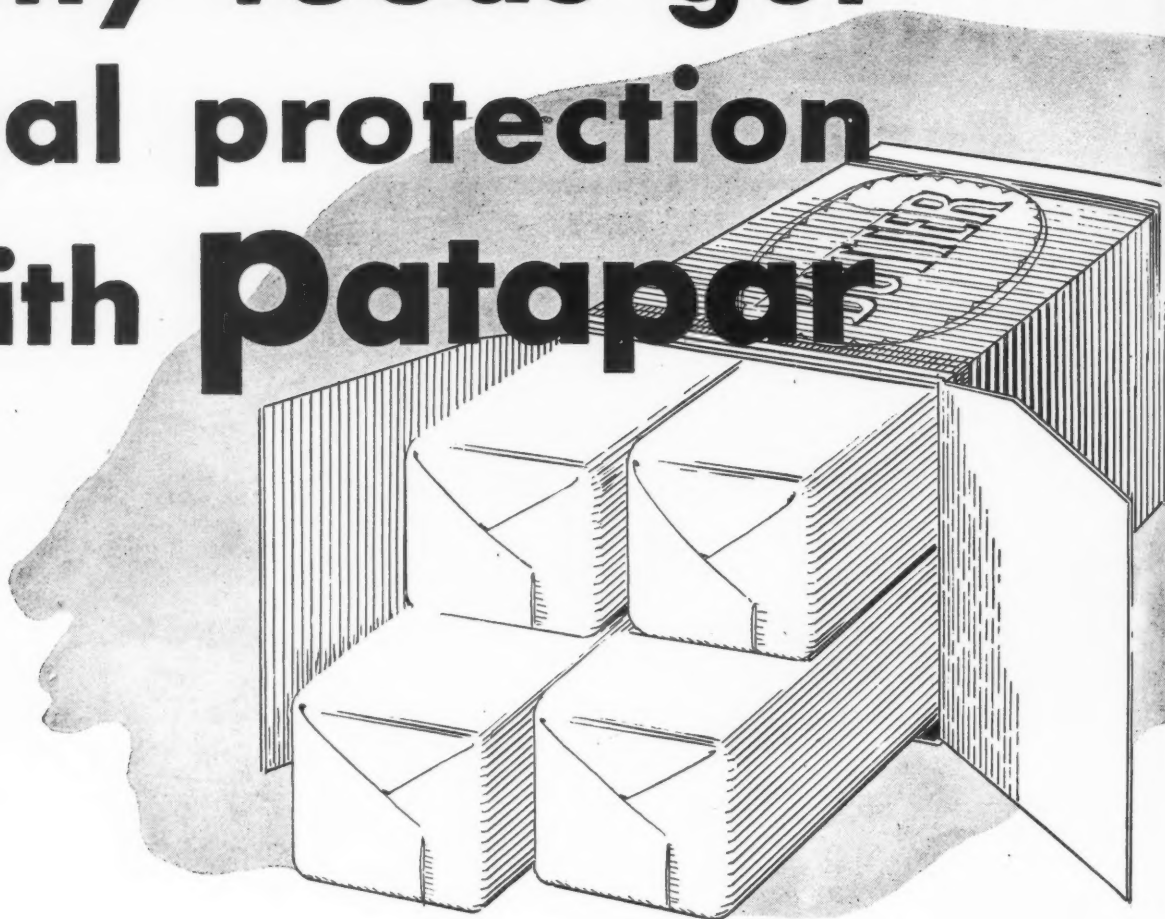
REG. U.S. PAT. OFF. & FOREIGN COUNTRIES



CREPED WADDING

*TRADE MARK

Why foods get real protection with Patapar



Patapar* Vegetable Parchment has qualities that protect flavor — help keep foods fresh and appetizing.

WET-STRENGTH — Patapar is never afraid of moisture. It is strong when wet — strong when boiled.

GREASE-RESISTANT — When it comes in contact with grease, fats, oils, Patapar resists penetration. Its outer surface keeps clean. Makes a pleasant package for housewives to handle.

A Few of Patapar's uses:

Wrappers for butter, meats, fish, cheese, poultry, shortening, ice cream, vegetables, dried fruits, Carton and box liners. Bulk packaging units. Milk can gaskets. Milk bottle hoods. Packaging coffee and tea.

Many users of Patapar include this nationally advertised Keymark on their printed wrappers as a symbol of protection.



ODORLESS, TASTELESS — Patapar doesn't impart that "papery" taste or odor. Foods keep their original flavor.

TRANSLUCENT — Patapar's clear texture lends distinction to the package, yet it doesn't transmit harmful light.

PRINTING — Patapar can be beautifully printed in one or more colors. Inks used are harmless to taste, and have been specially developed to withstand moisture. Printing is done right in our own plants.

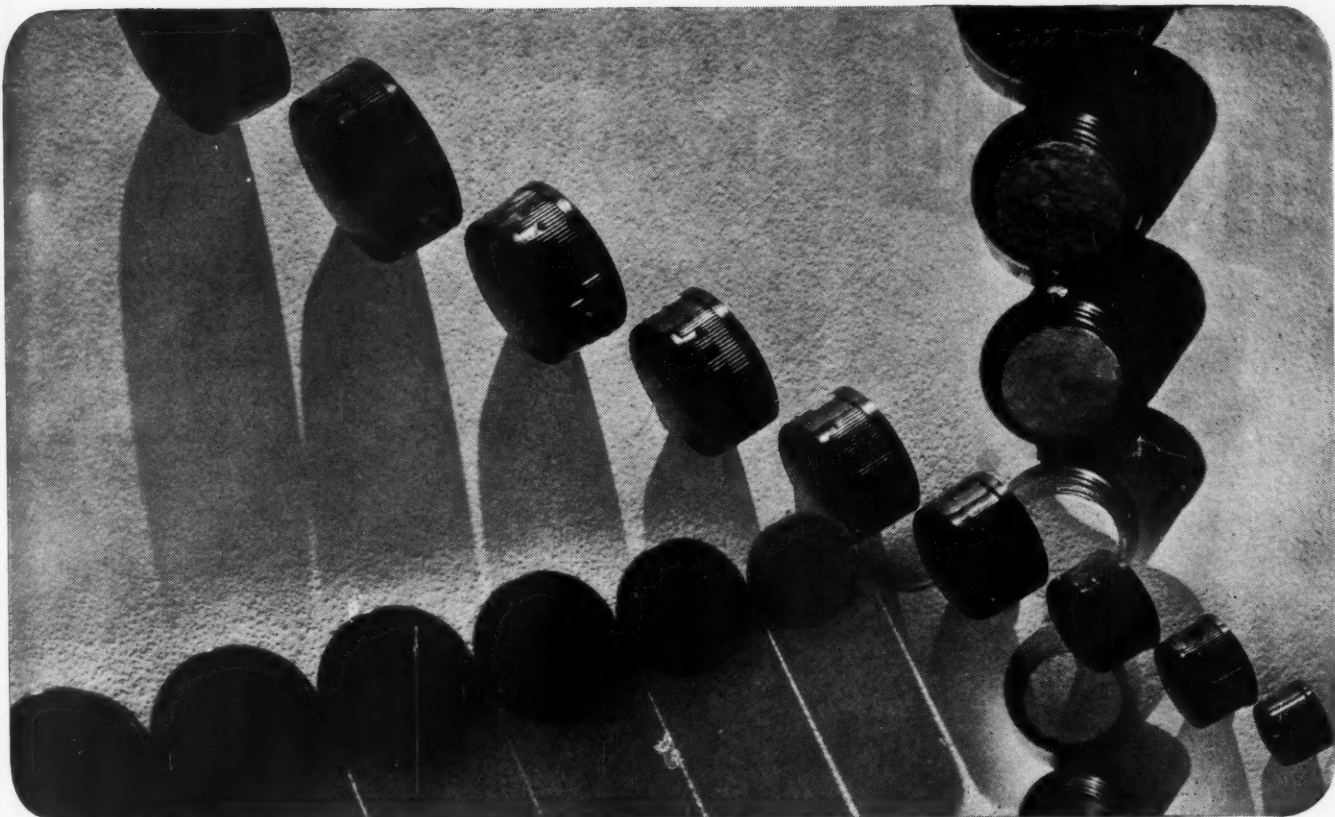
*Reg. U. S. Pat. Off.

Paterson Parchment Paper Company • Bristol, Pennsylvania

Headquarters for Vegetable Parchment Since 1885

WEST COAST PLANT: 340 BRYANT STREET, SAN FRANCISCO 7, CALIFORNIA

BRANCH OFFICES: 120 BROADWAY, NEW YORK 5, N. Y. • 111 WEST WASHINGTON ST., CHICAGO 2, ILL.



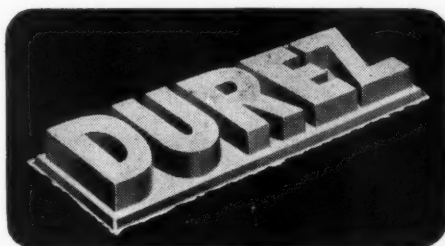
You can top them all ...with **PLASTICS!**

● Closure manufacturers everywhere are turning to the versatility of Durez phenolic plastics as the ideal answer to a common problem . . . selecting a material which possesses a range of properties wide enough to permit its use in manufacturing closures of all sizes and shapes—for all purposes.

A few inherent characteristics of Durez molding compounds are non-bleeding, eye-appealing finish, excellent moldability, and resistance to moisture, chemicals, alkalis and temperature extremes. These are the qualities which ac-

count for the fact that more closures have been made from Durez than from any other plastic.

The services of experienced Durez technicians are always available towards helping you and your custom molder solve any plastic material problem which you may have. Durez Plastics & Chemicals, Inc., 488 Walck Road, N. Tonawanda, New York.



TIP ON PLYWOOD CONTAINERS

Combine ease of manufacture with a finished product that has eye-appeal and tremendous durability—and you have the wartime-proven Durez resin-bonded plywood container. The unusual strength, and resistance to temperature extremes and moisture which Durez resin imparts to the rich beauty of plywood, make it a *natural* for the progressive container manufacturer with an eye on post-victory markets.

PHENOLIC
RESINS

MOLDING COMPOUNDS

INDUSTRIAL RESINS

OIL SOLUBLE RESINS

PLASTICS THAT FIT THE JOB

PERMANENT

Surface Decorations On Every Type Of Package!

New Process Allows Integral Color Decoration of Plastics, Metal, Glass, Wood and other Surfaces

Creative's package decoration is proved permanent in actual use by the leading names in American packaging.

Scratch-proof, rub-proof, water and alcohol-proof decorations, trade-marks and designs on dials, bottles, plastic containers, etc.

No limitation on colors or design.

Send for samples and prices.

Creative

PRINTMAKERS GROUP

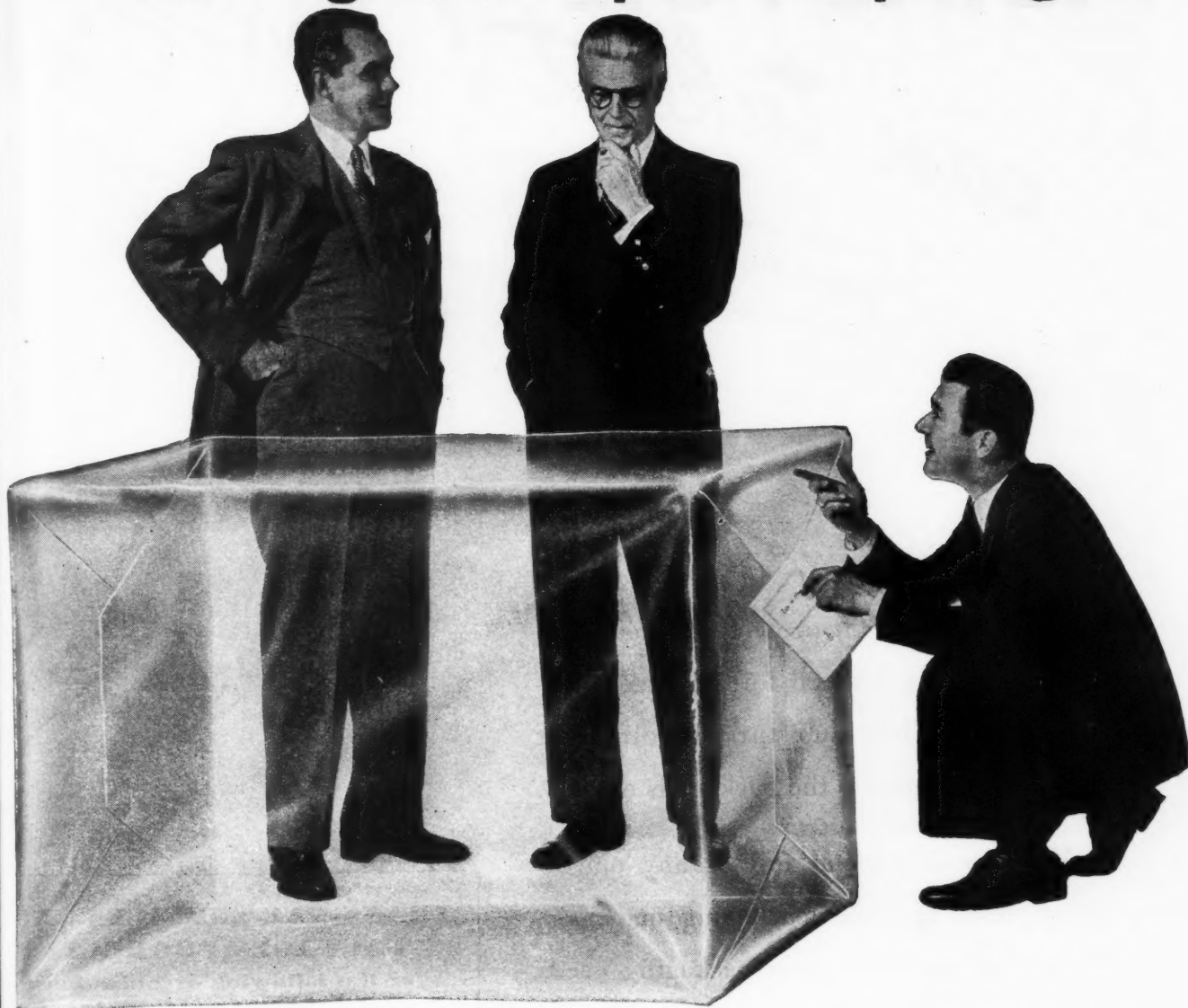
14 West 17th Street

NEW YORK 11 • CH 3-6800

Surface Decorators for the Packaging Field



Three angles on a post-war package



Each has a reason for voting it "Tops"

The problem of post-war packaging can be approached from several different angles. For instance, there's the viewpoint of . . .

The Sales Executive

"**TRANSPARENCY** is important. Transparent packaging makes a product its own salesman. That's a big advantage in this era of self-service. People want to see what they buy. They want to be sure they get full value for their money. Transparent Du Pont Cellophane makes buying easier . . . makes selling quicker."

The Production Executive

"**PROTECTION** of the product helps maintain its reputation. The package must safeguard freshness and flavor. It must prevent loss from soilage and spoilage. *Moistureproof* Du Pont Cellophane helps the con-

sumer get out of the package all the quality we put into it."

The Purchasing Agent

"**LOW COST** will be a necessary factor in post-war packaging. We must watch distribution costs closely . . . secure every possible packaging economy. Du Pont Cellophane offers us transparent protection . . . at lowest cost."



BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

To meet all angles, Du Pont research is constantly at work to develop and improve types of packaging film for greatest efficiency.

Today, war uses of Cellophane are limiting the supply for essential civilian purposes. We hope the day will soon come when there will be sufficient Du Pont Cellophane to meet all your requirements.

E. I. du Pont de Nemours & Co. (Inc.), Cellophane Division, Wilmington 98, Delaware.

DuPont Cellophane

Shows what it Protects—at Low Cost

METAL FOIL *can take it!*



WRAP your product in metal foil and *know* it's well protected! That's because Trans-Pac's metal foil packages safeguard it from heat, moisture and dirt right up until the minute the package is opened.

Whether it's metal foil or any one of many other superior packaging materials, Trans-Pac can plan your packaging needs now. In addition to our own staff, we work closely with the engineering and research divisions of the leading manufacturers of packaging supplies.

Our long experience dealing with diversified products equips us to turn out the best in modern packaging. We should be happy to advise you on your particular post-war packaging needs.

TRANS-PAC SERVICES, INC. **PACKAGES PRODUCTS** for the following organizations:

EASTMAN KODAK CO.
CAMPBELL'S SOUP CO.
J. C. ENO, INC.
BLOCK DRUG CO., INC.
THE KNOX CO.
FOSTER MILBURN CO.
THE NORWICH PHARMACAL CO.
HUMPHREY'S MEDICINE COMPANY
GENERAL MILLS, INC.
C. J. VAN HOUTEN & ZOON, INC.
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CARTER PRODUCTS, INC.
THE ARNER CO., INC.
KORAL LABORATORIES, INC.
JOHNSON & JOHNSON INTERNATIONAL
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TRANS-PAC SERVICES, INC.

602 WEST 52ND STREET, NEW YORK 19, N. Y.

FISHING FOR POSTWAR SALES?



PACK TO ATTRACT IN

Maryland
glass

If you are angling for new customers in the competitive markets of tomorrow, remember that smart, attractive packaging stops the eye . . . starts the sale. Let the sparkling grace of crystal clear Maryland bottles and jars help make your product bait for more customers. We will be glad to send samples if you are making package improvement plans for the future.

MARYLAND GLASS CORPORATION, BALTIMORE 30

270 Broadway, New York 7

German Bros., Inc., 1501 S. Laflin St., Chicago 8

E. McLaughlin, 401 Lock St., Cincinnati 2

Walter Todd, 1224 Union Ave., Kansas City 7

Walter Scott, 608 McCall Bldg., Memphis 3.

A. A. Baumstark, 4030 Chouteau Ave., St. Louis 10

Owens-Illinois Glass Co., Pacific Coast Division,

135 Stockton St., San Francisco 19

Specify Findley's #730 Folding Box GLUE



Here is a High Service Factor Folding Box Glue . . . possessing these advantages:

- ① Exceptional adhesion on such paper stocks as Kraft, Clay-Coated, Manila and Chip-Board.
- ② Proven performance for Strip Gluing.
- ③ Good color visibility for "operating check" at high speed.
- ④ Exceptionally clean machining qualities permit high speed production.
- ⑤ Age-proof. Will not crystallize. Boxes will not "pop".
- ⑥ High humidity resistance . . . especially desirable in food packaging.

These are some of the characteristics that result from Findley's S. F. formulation and four-point control.

Time to change to Findley's No. 730 Folding Box Glue!

THE F. G. FINDLEY CO.

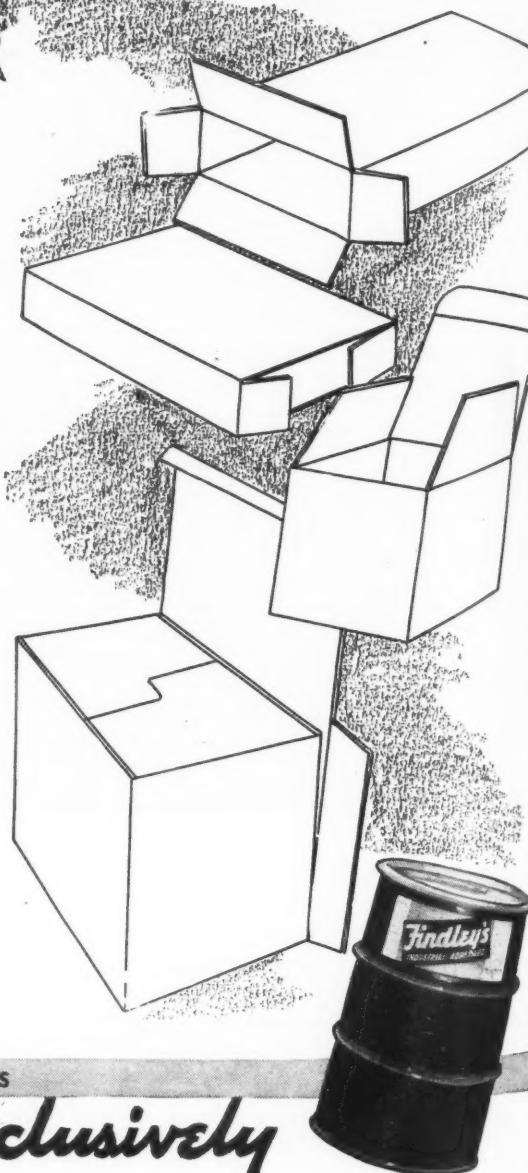
1230 N. 10th STREET

MILWAUKEE 5, WISCONSIN

Findley's

INDUSTRIAL ADHESIVES

Exclusively



keeping pace with your products



Your improved consumer goods should be well and attractively packaged. Central States experts know how to provide effective bag or case-liner protection against the elements ...how to impart eye appeal...why and how to add many other merchandising improvements to your package.

Let us tell you about our exclusive bag-making developments, many of them produced by machinery designed by our own engineers.

Yours may be a conventional bag requirement or one calling for improved, water-proof, moth-proof, flame-proof or pressure-seal construction; or you may wish some new feature not previously attempted. You can count on Central States to furnish packaging to keep pace with your product.

CUSTOM DESIGNED PAPER BAGS • PRESSURE SEAL BAGS • WAXED PAPER BAGS
CASE LINERS • PLASTIC BAGS • RIGID TRANSPARENT CONTAINERS OF ALL KINDS

CENTRAL STATES PAPER & BAG CO.

2600 NORTH BROADWAY, ST. LOUIS 6, MISSOURI, U. S. A.

CHICAGO, 520 N. Michigan Avenue • NEW YORK, 489 Fifth Avenue • DETROIT, 1951 East Ferry Street

SIGHT comes before STRING

► Buyers' hands reach out for what attracts their eyes. They must see before clerks can wrap. Brilliantly packaged in transparent film or lustrous metal foils, processed by Dobeckmun, your products catch the eye . . . and the sale.

Film packages permit inspection of actual merchandise. Foils can be attractively color-printed in facsimile with equal effect. In both cases, good selling copy and use-instructions lead to the ring of the cash register.

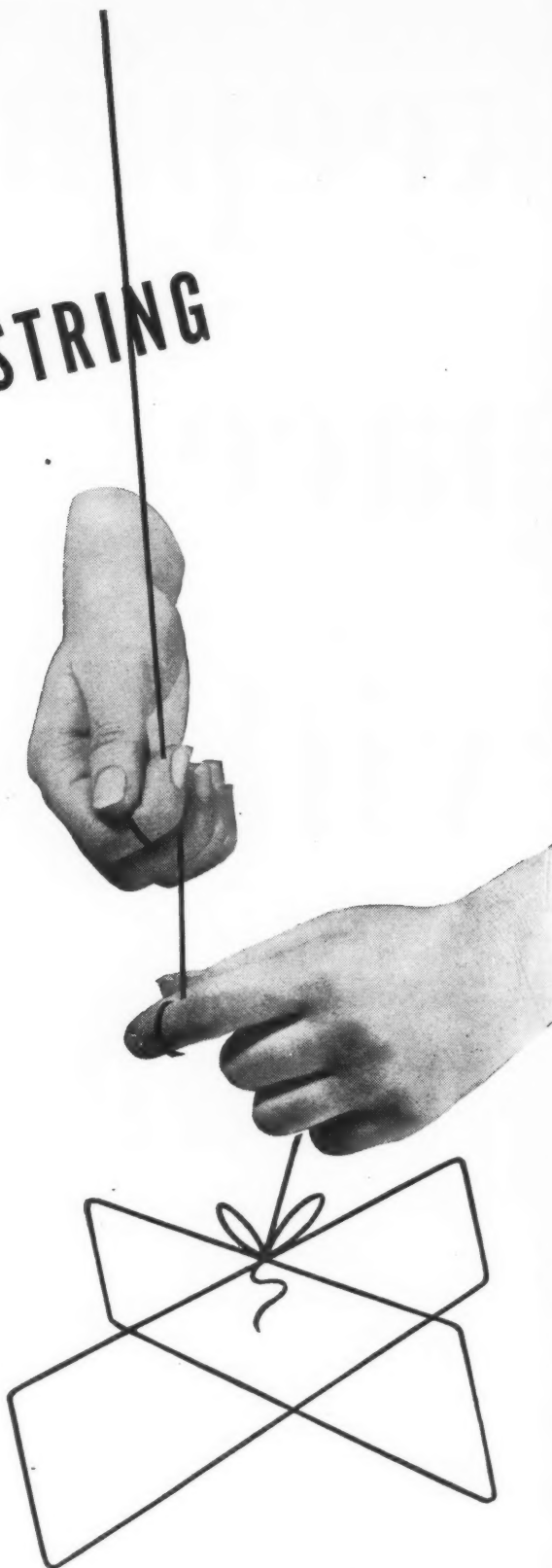
Ask our technical and creative men for ideas and suggestions that will lead your packages to the market basket. Consultation now will permit faster deliveries when materials become available. The Dobeckmun Company, Cleveland 1, Ohio. Branches at Boston, Chicago, Los Angeles, New York, Philadelphia, San Francisco and Seattle. Representatives everywhere.



CLEVELAND PLANT

DOBECKMUN

► SELF-SELLING PACKAGES IN PROCESSED FILMS AND FOILS ◄



... BUT I WANT IRISH LINEN



Early in the 18th century, the Irish Linen Board was organized to promote the industry and control quality. It established definite standards which were rigidly maintained. All linens had to be inspected and stamped by a seal master, appointed by the Board, before they could be placed on sale.

This practice of guaranteeing linen quality by an official seal is continued today by the Irish Linen Society. It is largely responsible for the established confidence in the excellence of Irish Linen and its general acceptance as the standard of quality.

In the field of glass containers, the name Carr-Lowrey has comparable significance. Over the years our constant aim has been the maintenance of "superior quality." More than 52 years of devotion to this principle has earned the confidence and acceptance of a host of users of fine glass containers.



*It's a Long Lane that
Has No Turning*



SO MODERNIZE YOUR
POST-WAR PRODUCT
WITH *Sefton's*
"PROFIT PACKAGING"

Keep your post-war product abreast of the times with Sefton's "Profit Packaging!" In this ever-changing world a package can soon become "dated". Sefton's "String Opening" can is as modern as tomorrow! One pull of the string and it opens in a jiffy! And, presto, it can be closed again, if necessary! These features* give it immediate consumer appeal. Investigate its possibilities for your product!

***OTHER FEATURES**

It factory-seals your product

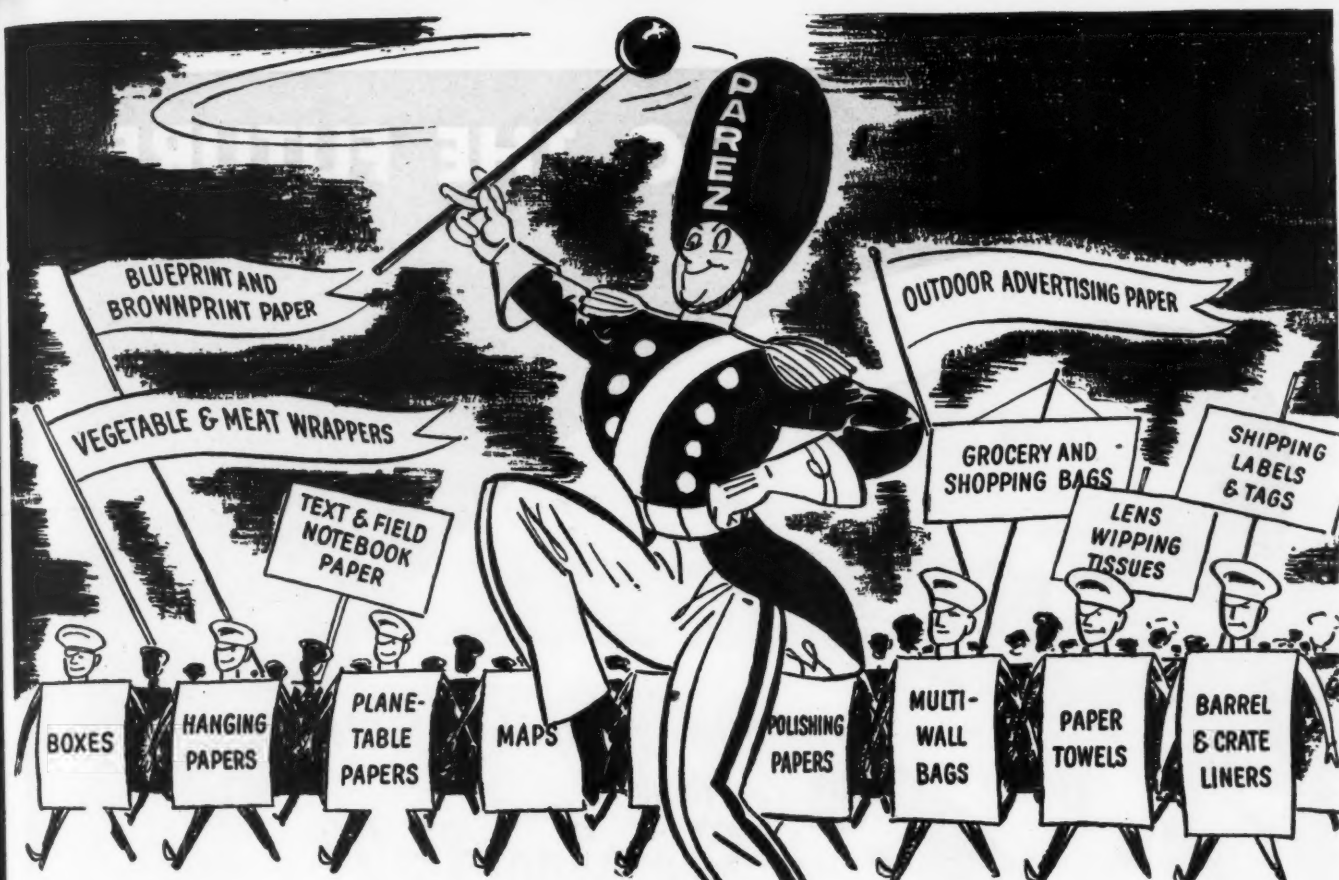
It's Tamper-proof!

It has full opening to facilitate packing!



FIBRE CAN COMPANY
ST. LOUIS • • • • • NEW ORLEANS

DISTRICT OFFICES: • Los Angeles • San Francisco • Denver • Tampa • Chicago • Des Moines • New Orleans • Boston • Detroit • Kansas City • St. Paul
Omaha • New York • Cincinnati • Cleveland • Oklahoma City • Pittsburgh • Memphis • Nashville • Dallas • Houston • Salt Lake City • Seattle



PAREZ* LEADS THE PAPER PARADE

... FOR NEW WET AND DRY STRENGTH PRODUCTS

Today PAREZ** 607 for wet and dry strength paper products is doing "above-the-line duty" meeting super-specifications for all military demands.

Heading the list is its use for wet-strength Army map paper. This paper meets the demands of high wet strength, high dry strength, super fold endurance, greatly improved wet and dry erasure so well, and improves printability of the sheet so much because of lack of waviness and curl, that all government agencies have adopted it. PAREZ is also going into papers for wet-strength meat wrap, Navy lens wiping tissue, wiping tissue to replace rags and text papers that resist wet thumbing and repeated fold for use in Navy instruction manuals.

Although today PAREZ 607 is still an allocated

material, larger quantities are now available for civilian uses. Its performance for essential war papers shows you the improvements it will give your paper products tomorrow. If you would like to utilize PAREZ for your proposed postwar papers, small lots are currently available for experimental work without an allocation request. We shall also be glad to work with you on potential applications.

When Performance Counts... Call on Cyanamid

**Trade-mark of American Cyanamid & Chemical Corporation covering its synthetic resins for use by the paper industry. The processes under which PAREZ is applied in the production of wet strength paper are covered by U. S. Patents Nos. 2,291,079; 2,291,080 and 2,345,543 and U.S. Patent Application Serial No. 453,032.

Waxes • Wax Sizes • Rosin Size
Synthetic Resins • Casein • Alum
Sulphonated Oils • Fillers • De-
foamers • Soda Ash • Caustic
Soda • Salt Cake • Acids • Clays
Satin White • Aerosol*
Wetting Agents • Calmicro
(Calcium Carbonate) and
other Paper Chemicals.
*Reg. U. S. Pat. Off.

American CYANAMID & Chemical Corporation
(A Unit of American Cyanamid Company)

30 ROCKEFELLER PLAZA • NEW YORK 20, N. Y.

DISTRICT OFFICES: Boston, Mass.; Philadelphia, Pa.; Baltimore, Md.; Charlotte, N. C.; Cleveland, Ohio; Chicago, Ill.; Kalamazoo, Mich.; Detroit, Mich.; St. Louis, Mo.; Azusa, Calif.; Seattle, Wash. In Canada: Dillons Chemical Company, Ltd., Montreal and Toronto.

LOOKING INTO THE FUTURE



When you think of bottles
think of

Swindell

Machine made and hand made
glass containers for cosmetics,
drugs and beverages.

SWINDELL BROTHERS, Inc. BALTIMORE, MARYLAND

200 FIFTH AVENUE, NEW YORK

ROBERTO ORTIZ—HAVANA, CUBA



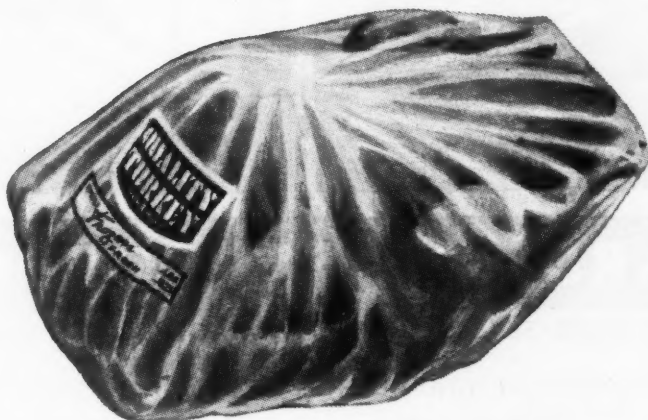
FROZEN FOODS IN "TRACO" WRAPS KEEP MOVING

Alert dealers are quick to give attractive TRACO cellophane packages preferred counter display . . . Your package is easily accessible to customers . . . Eye and appetite appeal stimulate impulse buying, and your product *keeps moving* over the dealer's counter. Cellophane was the preferred packaging before the war. As the available supply increases, Cellophane's popularity for packaging frozen foods will continue to mount. It is the dependable moisture-proof wrapper, it insures cleanliness and full product protection, and is adaptable for automatic wrapping machines in printed sheets or rolls.

Use TRACO wraps for:

Frozen Meats • Frozen Vegetables
Frozen Fish • Frozen Poultry
Frozen Fruits and Berries
Pre-cooked Frozen Foods
Ice Cream and Puddings

A card or the coupon below will bring you the aid of our technicians in solving your packaging problems.



TRAVER CORPORATION

Dept. MP85 • 358-368 West Ontario Street • Chicago 10, Illinois

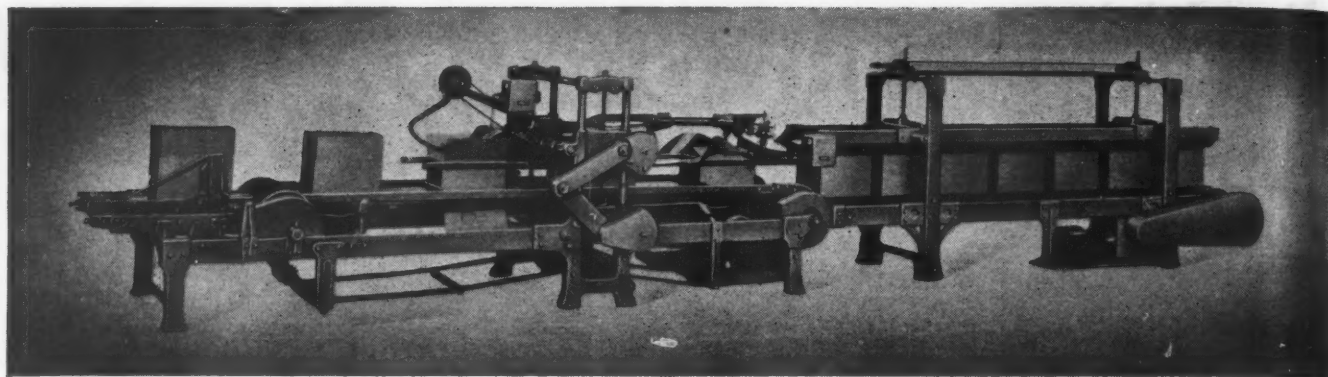
CLIP, ATTACH TO YOUR
LETTERHEAD AND
MAIL TODAY

- ☐ Kindly send samples of TRACO wraps for commercial pack purposes.
- ☐ We will welcome a visit from one of your technicians to discuss our packaging problems.

Name _____

Title _____

MP85

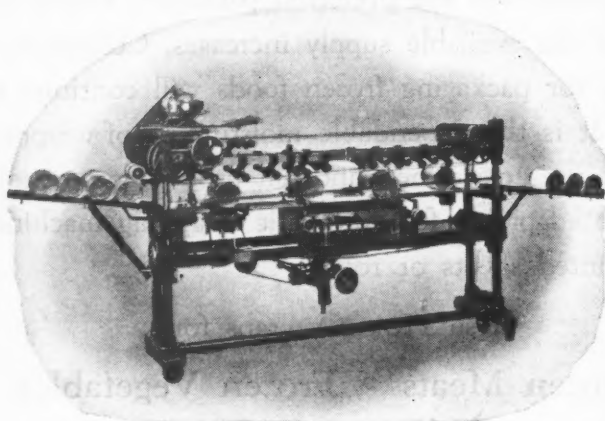


CASE SEALER

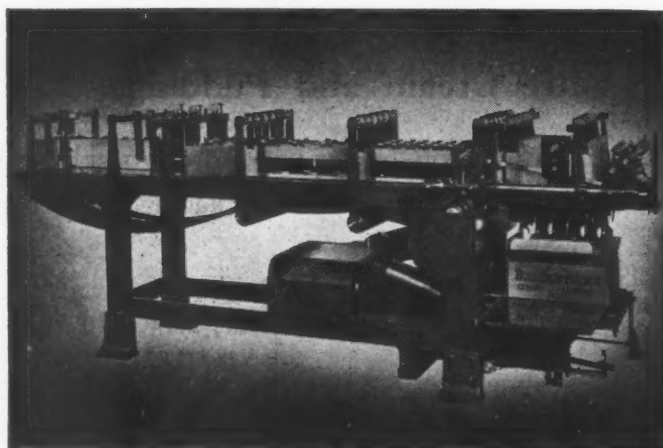
LABELLING—SEALING—CASE PACKING—BAG PACKING

ALL AROUND YOUR PACKAGING LINE

LABELER



BOTTLE PACKER

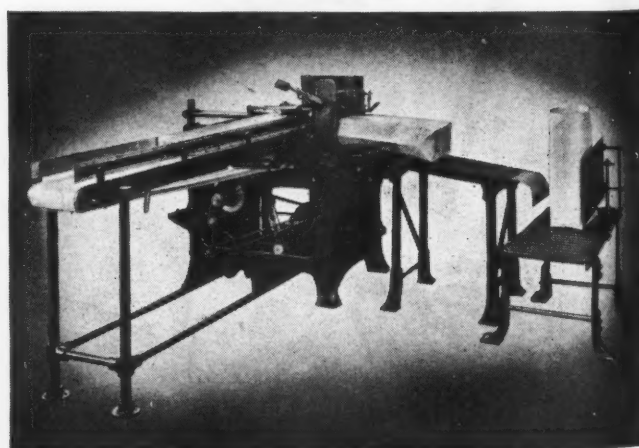


IT'S STANDARD-KNAPP

We can't show you all the machines that we make. But picturing a variety, however, we have tried to indicate the versatility of our packaging machinery, design and building service.

STANDARD-KNAPP case sealers are used in most of the leading plants of most high production packaging industries, including beer, cigarettes, household products, canned soups, etc. Other STANDARD-KNAPP machines have also become standard for quality in various operations. In addition, we have constantly developed new types of equipment for specialized packaging purposes as for instance the bag packer developed for the sugar industry and shown on this page. Whether it is a variation of one of our proved machines, or a new design to handle some new packaging operation, we think we can give you the right answer.

BAG PACKER



STANDARD-KNAPP CORPORATION

MANUFACTURERS OF CASE SEALING, CASE PACKAGING, AND CAN LABELING MACHINES

FACTORY and GENERAL OFFICES—PORTLAND, CONNECTICUT

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NEW YORK 22, N. Y.

221 North LaSalle St.
CHICAGO 1, ILL.

145 Public Square
CLEVELAND 14, OHIO

300 Seventh Street
SAN FRANCISCO 3, CALIF.

420 S. San Pedro Street
LOS ANGELES 13, CALIF.

3224 Western Avenue
SEATTLE 99, WASH.

1208 S.W. Yamhill Street
PORTLAND 5, OREGON

Paul Brown Building
ST. LOUIS 1, MO.

Windsor House, Victoria Street, LONDON, ENGLAND

KIMBLE VIALS

MEMO

*Still up to our
necks in war
production, but
— there'll
come a day!*



for Greatest Transparency . . Least Distortion

This unretouched photograph of a Kimble vial, fabricated from machine-drawn Kimble glass tubing, tells its own story of how clearly this attractive type of container would display your product.

For Assurance



• • • *The Visible Guarantee of Invisible Quality* • • •
KIMBLE GLASS COMPANY VINELAND, N. J.
NEW YORK • CHICAGO • PHILADELPHIA • DETROIT • BOSTON • INDIANAPOLIS • SAN FRANCISCO



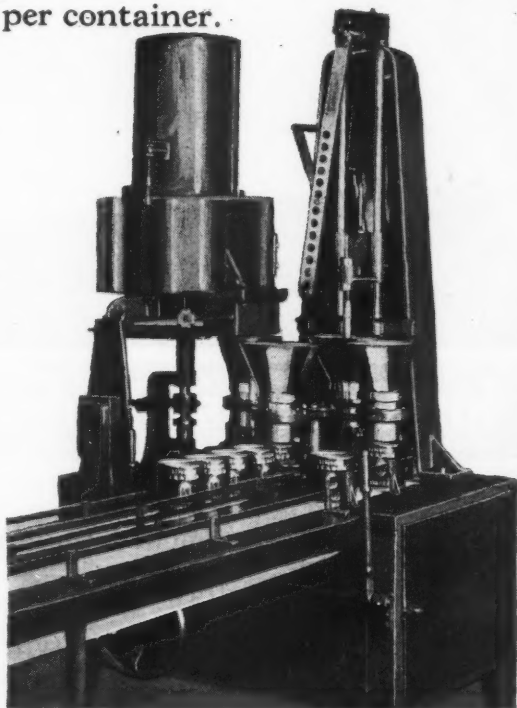
*I Was A Problem Child
Until WRIGHT'S Developed
A Machine To Weigh And Pack
Me Automatically*

Hard-to-pack material, that's me. Smoking tobacco, dehydrated foods, etc. Consumers wanted me in 4 to 16 ounce tin cans, glass and fibre containers. I had to be weighed and packed by hand. Expensive to handle, I'll say so. And back-breaking for operators, too, particularly when I had to be compressed. Then, just before Pearl Harbor, Wright's Automatic introduced their humidor packer. I was licked. American Tobacco, Brown Williamson, Larus & Brothers, P. Lorillard, and Phillip Morris were among those purchasing the machines. Next, John Morrell & Co. installed and successfully used the humidor packer for weighing and packing dehydrated dog food. Only the War and Wright's all-out Army-Navy production kept the list from growing.



*Send
your packaging
problem children to*

Now Wright's is preparing to resume civilian activity the minute war production schedules permit. Interested parties are invited to send sample material, containers, and data on amount to be packed per container.



Wright's Humidor Packer for automatic weighing and packing. Variable speed from 15 to 50 containers per minute. Write for literature.

Wright's Automatic Machinery Co.

Durham, North Carolina



Cable Address: Yonwright

"Specialists Since 1893 In Turning Labor Serving Ideas Into Action"



This subject originally appeared in a recipe booklet produced at U. S. P. & L. for the Hershey Chocolate Corp.

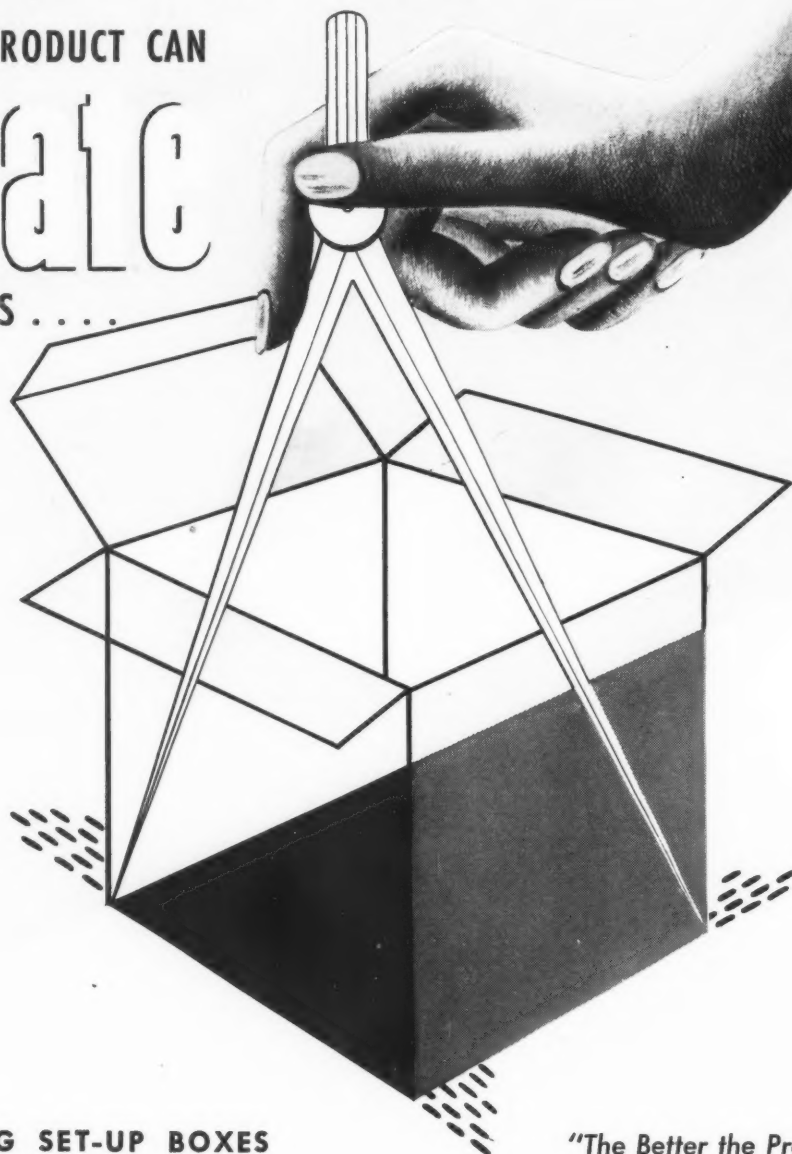
Done to perfection...

That's the most anyone can claim for a cake. And, that's the most any advertiser can say about the reproduction of his advertising material. It is just what hundreds of leading advertisers say about their lithographed advertising materials produced at "U-S"... where the basic ingredients... paper and ink... are "mixed" with the skill and know-how of more than seventy-five years of experience in fine color reproduction. So, for perfection work on your displays, posters, booklets and broadsides... call on "U-S".



THE UNITED STATES PRINTING & LITHOGRAPH COMPANY
 HOME OFFICE: 392 BEECH STREET, CINCINNATI 12, OHIO ★ SALES OFFICES IN PRINCIPAL CITIES
 GREAT "U-S" PLANTS PRODUCING HIGHEST QUALITY ADVERTISING AND PACKAGING MATERIALS

WE **create** THE PACKAGE
 SO YOUR PRODUCT CAN
create
 MORE SALES



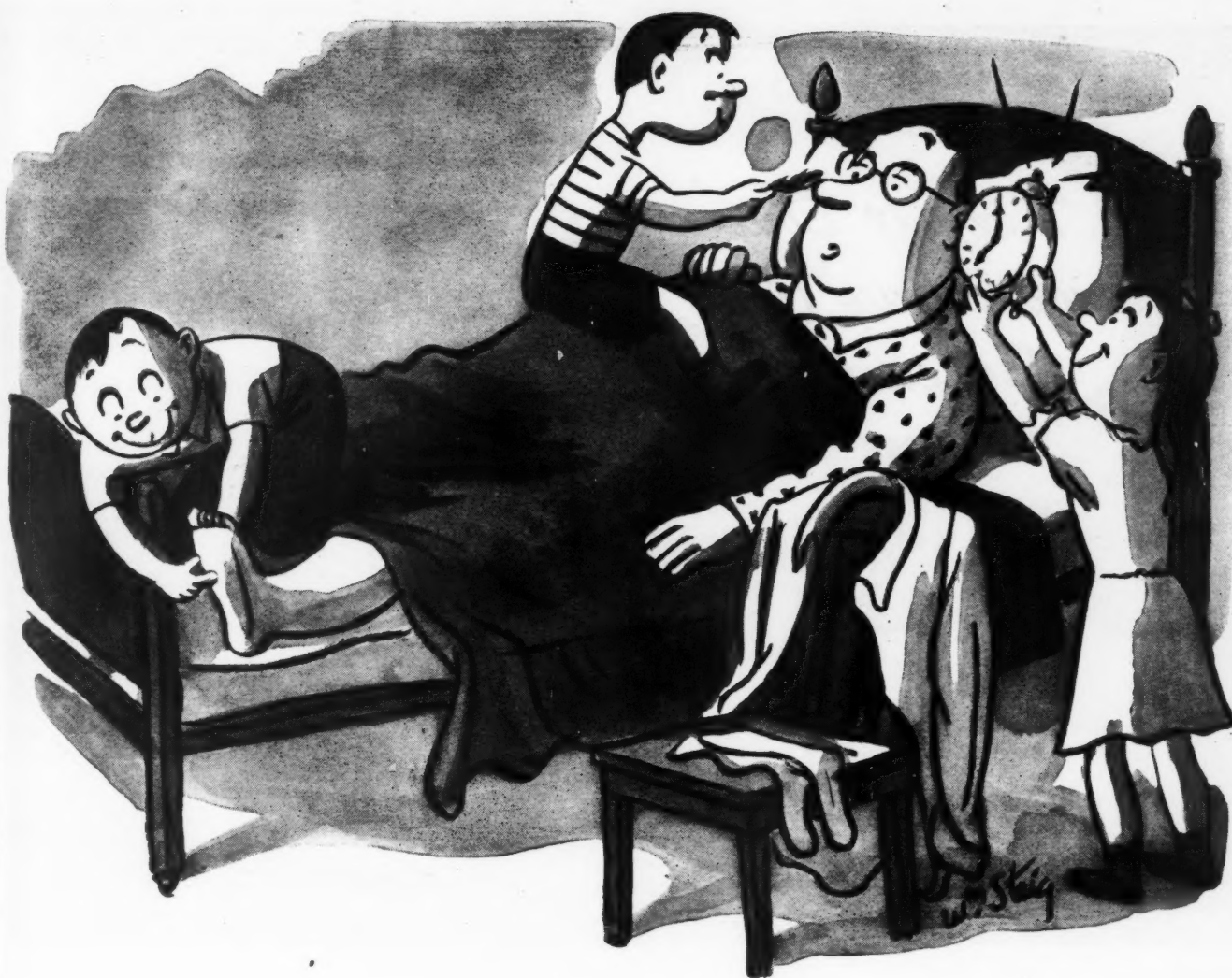
INTRIGUING SET-UP BOXES
 CREATIVE FOLDING CARTONS
 UNUSUAL MERCHANDISE
 COUNTER DISPLAYS
 SPECIALIZED PACKAGING
 ROUND BOXES

*"The Better the Product
 the More Important
 the Package"*

ACME PAPER BOX COMPANY

STATE AT SIXTIETH STREET • CHICAGO 21, ILLINOIS

Creators • Designers • Manufacturers



"The bigger the family — the better the service"

NEARLY every large family or business proves it! Continental's family will give you perfect packaging service. We've got the facilities and personnel to do it. We'll analyze your problem impartially and come up with the ideal package.

We can meet your needs, for now we cover every phase of packaging—metal containers, liquid-tight paper cups and

containers, fibre cans and drums, steel pails and other heavy duty containers.

Uncle Sam is our chief customer now. But keep your eye on Continental! And on Continental's trade-mark, too! It stands for *one* company with *one* policy—to give you only the best in quality and service.

Tune in: "REPORT TO THE NATION" every Sunday over coast-to-coast CBS network

CONTINENTAL



PAPER
DIVISION

CAN COMPANY, INC.

FIBRE DRUMS The Container Co., Van Wert, Ohio

LIQUID-TIGHT
FOOD CONTAINERS

Boothby Fibre Can Co.
Roxbury, Mass.

PAPER CUPS AND
FOOD CONTAINERS

Mono Containers
Newark, N. J.

COMBINATION PAPER AND METAL CONTAINERS

Headquarters: 330 W. 42d St., New York 18, N. Y.

13 Plants—Sales offices in all principal cities



CONTINENTAL PAPER CONTAINERS—Our complete line of attractive paper cups and protective liquid-tight containers has long been widely used by food and meat packers and by dairies everywhere. Especially popular for packing moist foods of all kinds. Space-saving nested cups are available in 6, 8, 12 and 16 oz. capacities; plus Mono Containers in sizes from 1½ oz. up to 10 lb.; liquid-tight cylindrical containers range from ¼ pint to 10 lb. capacity.



Avoid Moisture Damage in Over-Seas Packages

Simply put a few small bags of Jay Cee Silica Gel, like the ones above, inside your container . . . wrap or seal tightly . . . and ship over-seas without fear of damage from "in-the-package" moisture. Jay Cee Silica Gel is an ideal drying agent . . . has amazing power to absorb atmospheric moisture. Thus the air inside of containers is kept absolutely dry and delicate metal parts are protected from rust and corrosion.

Jay Cee Silica Gel is also used in pack-

ages of foods, fabrics, chemicals, and other products. Moreover, it has wide application in the air conditioning, refrigeration, and chemical industries. Jay Cee Silica Gel is clear white; passes a rigid section test; meets exacting Government specifications; is strictly a quality product.

JOBBER WANTED — There are excellent opportunities for jobbers to build profitable business on Jay Cee Silica Gel in a few territories. Write for details.

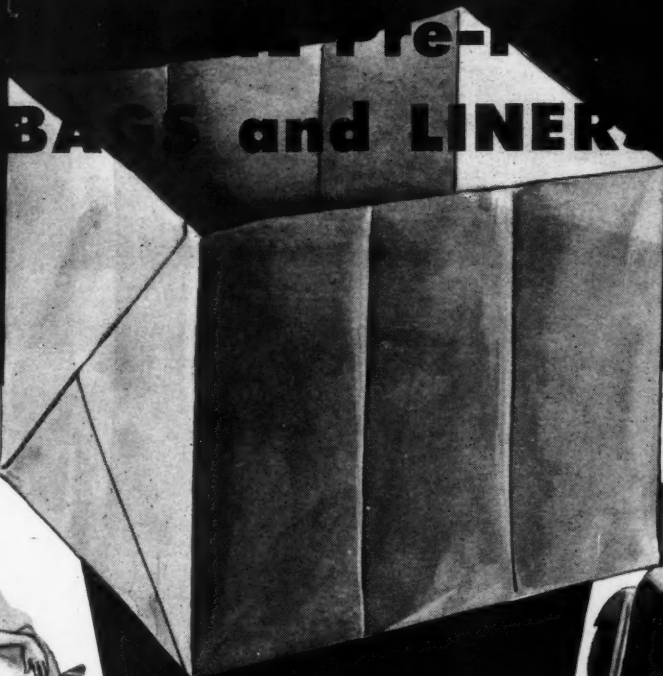
JOLIET CHEMICALS, LTD., INDUSTRY AVENUE, JOLIET, ILLINOIS



SILICA GEL

A superior dehydrant

Modernize Your Protective Packaging



Pre-Formed BAGS and LINERS

THE OLD!



Wrapping the product. Slow, awkward, bulky, costly—little protection.

THE OLD!



Inserting loose case liners. Slow, awkward, bulky, costly—little protection.

...AND THE NEW!



Inserting product in pre-formed bag. Efficient, easy, time-saving, economical—maximum protection.

...AND THE NEW!



Inserting Pre-Formed Liner in case. Efficient, easy, time-saving, economical—maximum protection.

There's been a revolution in packaging in the past 4 years—and one of the most important changes it has brought is the realization that *you can pack safer, easier, faster in a bag than with a wrap.*

The success of the Mehl V-type Pre-Formed Bags and Liners in the shipping of war materials is a matter of official Army and Navy records.

In the packaging of peacetime products—such as radios, furniture, hardware, tools, and household products—these same Pre-Formed Bags and Liners offer manufacturers a modern protective package geared to modern mass production methods and to modern ideas of safe shipping.



MEHL MANUFACTURING COMPANY

A Division of Sydney-Thomas Corp.

2351 FERGUSON ROAD, CINCINNATI 5, OHIO

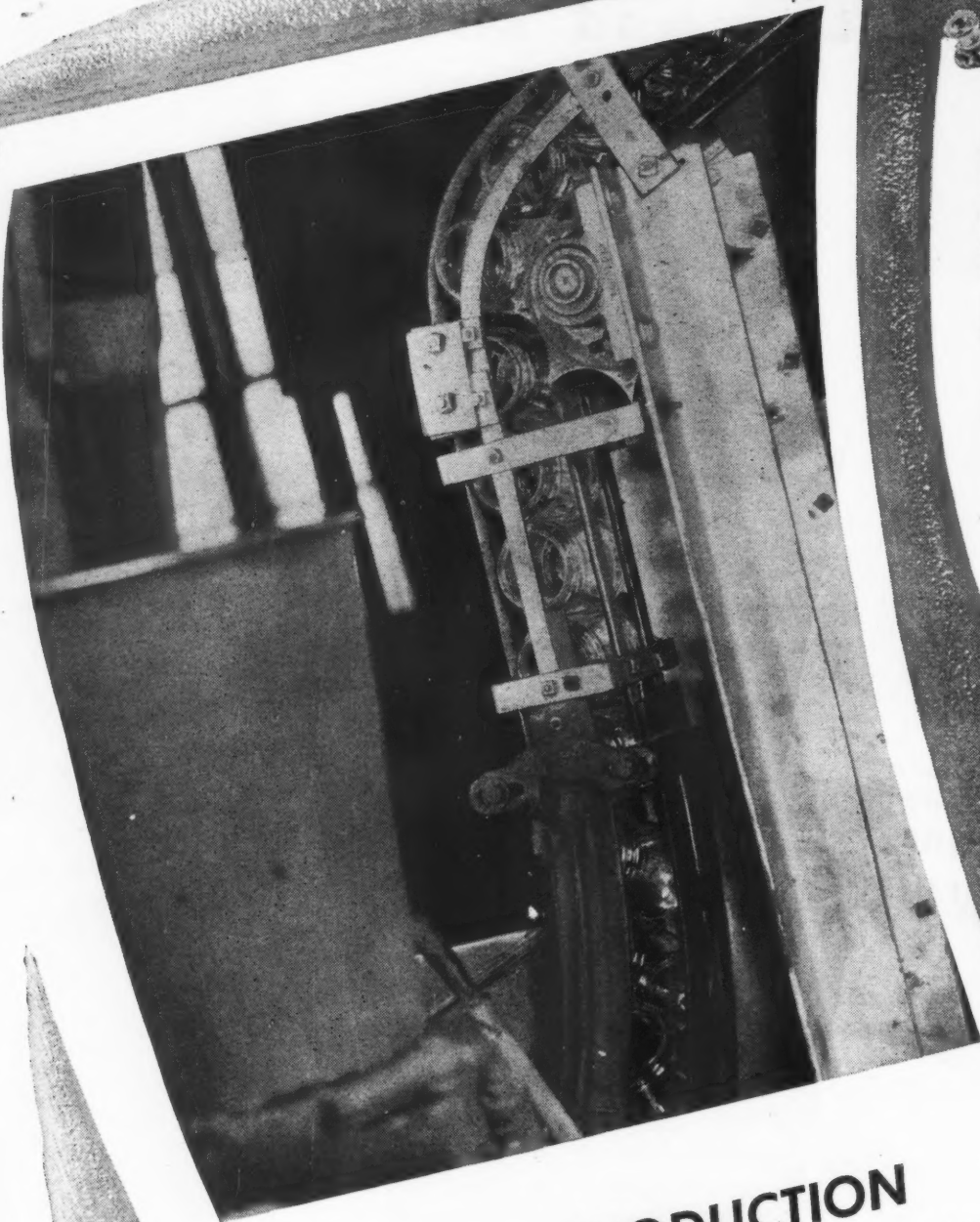
277 BROADWAY, NEW YORK 7, N. Y.

CONVERTERS OF PROTECTIVE PAPERS • CELLOPHANE • LAMINATED FOILS • and other PAPERS and FILMS

IDEAS

that become

EYE-DEAS



A LIFT TO PRODUCTION

Pre-heated on their controlled travel by gravity, from the floor above to the pea filler seen here, the steady, swift movement of this line reflects the effective merging of requirements and Owens-Illinois experience and products—a winning combination in food packaging.

EYE-DEAS FOR DISTRIBUTION

This supermarket found Duraglas Containers speeded sales by revealing the full, tempting lusciousness of golden peaches. The rich, striking color contrasts of glass-packed products light up attractive displays—putting buying "eye-deas" into customers' minds.

"Discover Something NEW
For Dinner Tonight"
De1 Monte Fruits "Glass"

EYE-DEAS FOR SELLING

Putting buying "eye-deas" in your customers' minds is also the purpose of Duraglas Container advertisements, currently appearing in Collier's and the Saturday Evening Post. Housewives everywhere are pre-sold on your glass-packed products, pre-conditioned to look for tempting, appetizing foods in truthful glass, and educated to want the convenience of glass containers, their sparkling, clean appearance on shelf and table.

Look to Duraglas Containers for a "3-way Service In Ideas" to lift you above competition in the tougher marketing days to come.



Duraglas

TRADE MARK REG. U. S. PAT. OFF.

CONTAINERS

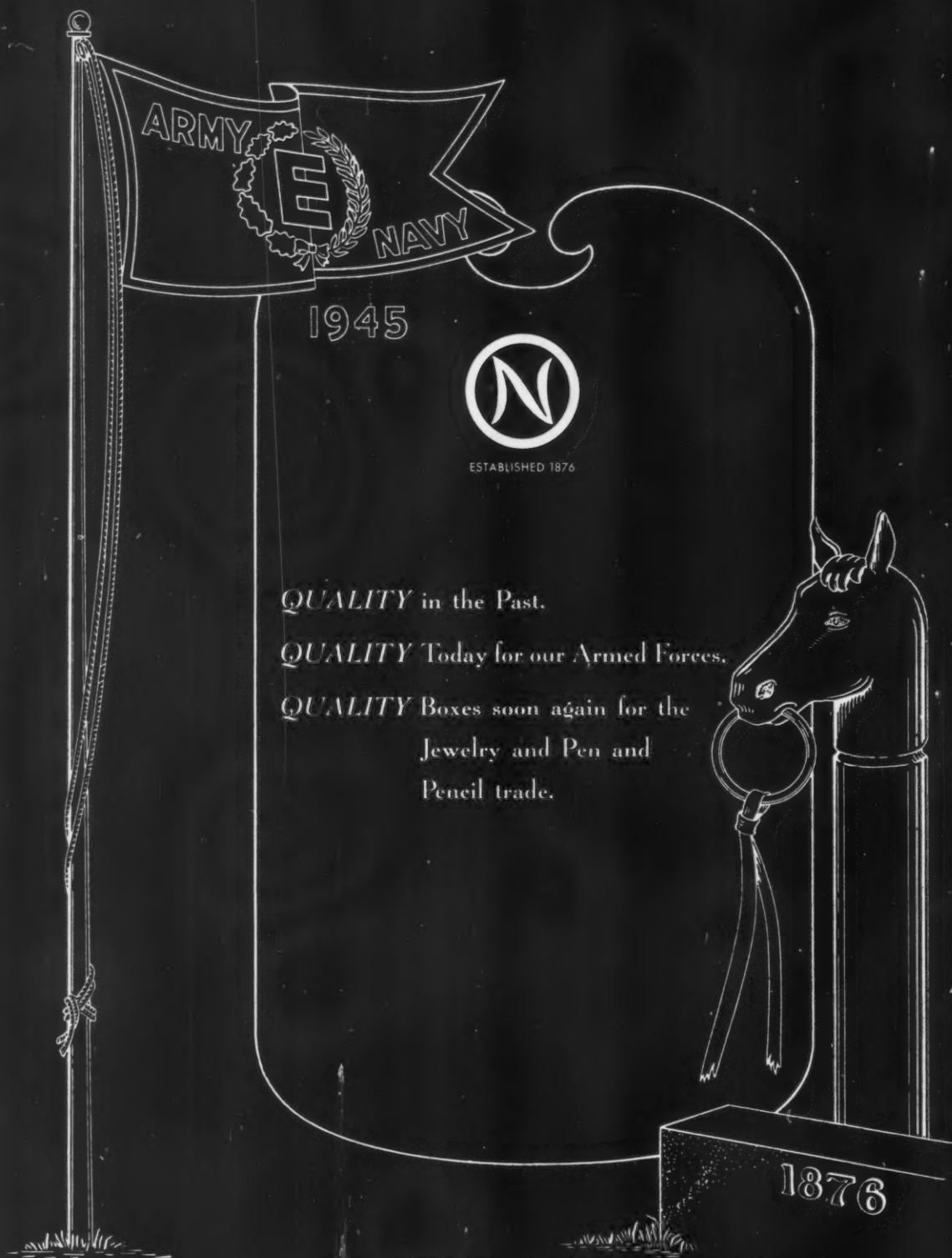
Preserve, Protect and SELL BY SIGHT

OWENS-ILLINOIS GLASS COMPANY
TOLEDO 1, OHIO

Copr., 1945, Owens-Illinois Glass Company

AUGUST • 1945

71



QUALITY in the Past.

QUALITY Today for our Armed Forces.

QUALITY Boxes soon again for the
Jewelry and Pen and
Pencil trade.

F. H. NOBLE & COMPANY
559 West 59th Street Chicago 21, Illinois



SYMBOL OF RELIABLE PERFORMANCE

The name BALL on home canning jars and accessories has been a guarantee of reliability to three generations of American families. This well-known symbol of quality is being kept active in the eyes and minds of shoppers and users. Point-of-purchase displays have urged essential home canning of vital foods. The BALL Blue Book each year carries over fifty pages of accurate detailed canning instructions, colorfully illustrated. Forbes can help you, too, in maintaining trade name recognition and acceptance.



FORBES

NEW YORK CLEVELAND

LITHOGRAPH CO.

P. O. Box 513 Boston 2

CHICAGO ROCHESTER

this is a message for **Packaging Engineers**

If you are packing for overseas shipment, you need Darex 737, a truly waterproof cement. Darex 737 is the key to successful packaging for the theaters of war. Millions of packages for all branches of the service have proved that Darex 737 gives a tight, waterproof bond that even days of immersion cannot loosen.

DAREX 737 OFFERS

- 1. IMMEDIATE AVAILABILITY**—ready for shipment NOW in any quantity, from Cambridge, Chicago, and Oakland.
- 2. STANDARDS**—meets and betters the joint Army-Navy specifications for waterproof glues, J.A.N.-A-101.
- 3. EASY TO USE**—easy application by hand or in high-speed automatic packaging machines.
- 4. ECONOMY**—gives a large coverage plus reasonable cost.
- 5. VERSATILITY**—seals all types of boards, including V-board, with a quick, positive grab.



DAREX 737
IS REASONABLY PRICED
... READILY AVAILABLE

IN 55 GALLON DRUMS

15c per pound F.O.B., Cambridge, Mass.
15¼c per pound F.O.B., Chicago, Ill.
17c per pound F.O.B., Oakland, Calif.

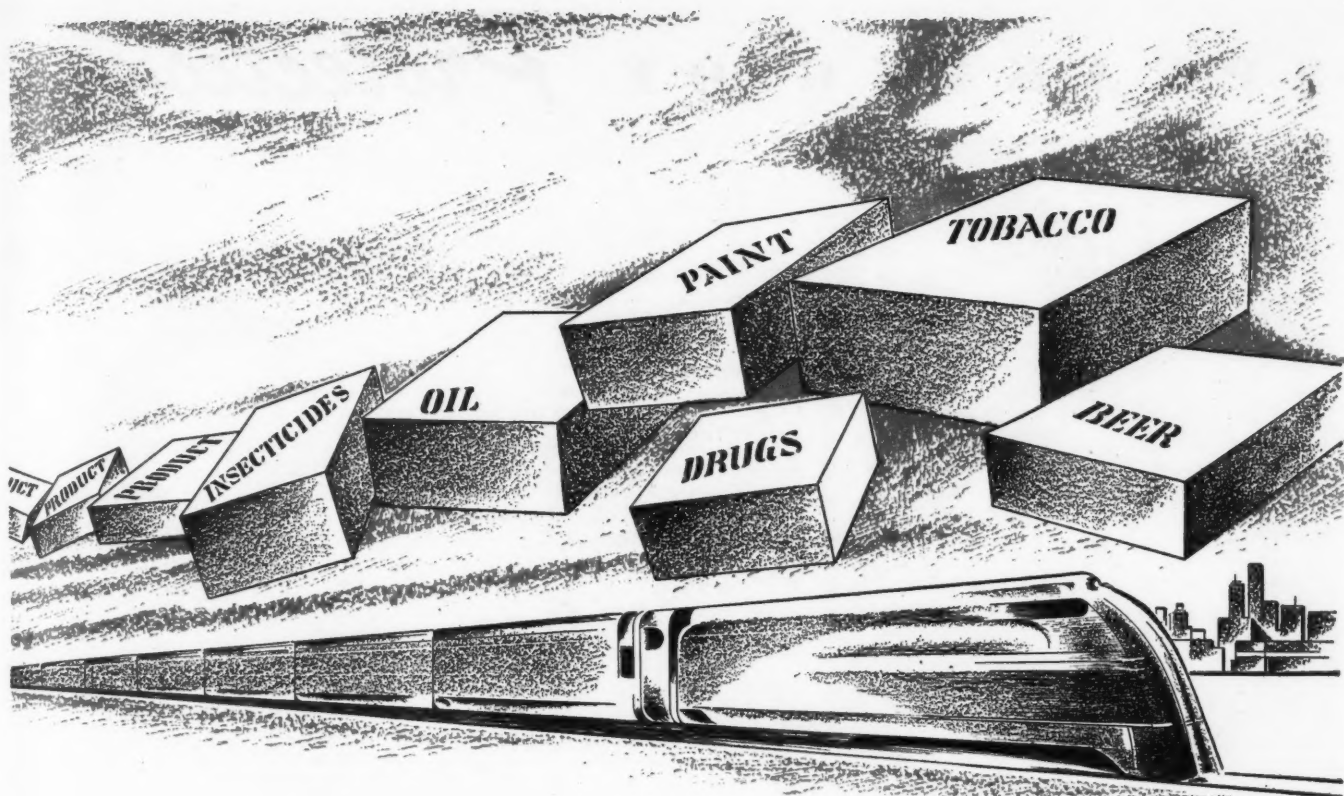
DAREX 737 CAN DO YOUR JOB, LARGE OR SMALL



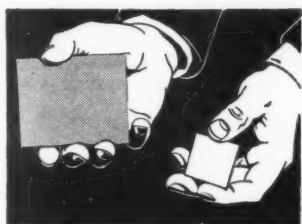
DEWEY AND ALMY CHEMICAL COMPANY
PACKAGING DIVISION

CAMBRIDGE 40
MASSACHUSETTS

Darex Waterproof Cements



How a piece of **STEEL** and a little **TIN** lower your **SHIPPING COSTS!**



It's more than 98% steel,
less than 2% tin



• Weight makes freight... and freight increases costs. So, you cut shipping costs when you pack and ship consumer goods in the lightweight steel-and-tin can... which is more than 98% steel, less than 2% tin.

You protect profits on consumer products *three* ways with the help of the steel-and-tin container: (1) you spend *less per pound* of goods to ship, because cans are *light*; (2) you need *less shipping space*, because cans are *compact*; (3) you save *time and labor*, because cans don't break, require no special handling and packing.

These hard facts explain why so

many manufacturers and packers of consumer goods pack and ship in trouble-free cans. Because they're light, compact and unbreakable, retailers and consumers also prefer them.

Acquainting America with CAN advantages

Full-page ads... full-color ads (totaling more than 26,000,000 printed messages) appear this month in 9 national magazines and in the magazine sections of Sunday newspapers from coast to coast. That's why America's buying millions are becoming better and better acquainted with all the advantages of products packed in steel-and-tin containers.

ADDED ADVANTAGES OF CANS FOR PACKING CONSUMER GOODS

1. Trouble-proof... don't break, split, tear.
2. Thrifty... save shelf and storage space.
3. Damage-proof... protect against air, light, moisture.
4. Good-looking... stay neat and clean.
5. Eye-appealing... easy to display attractively.
6. Labels can be lithographed on cans.

CAN MANUFACTURERS' INSTITUTE, INC., NEW YORK

NO OTHER CONTAINER PROTECTS LIKE THE CAN



SPEAKING OF *Protection*



SHE'LL BUY ONCE—but will she buy again?

This woman is typical of thousands who want the products they buy *properly protected* against the destructive effect of air, moisture, grease and odors.

And that's exactly the kind of protection your product enjoys when packed in a Royal **FLAV-O-TAINER**, the patented, duplex, flexible bag that is heat-sealed on all seams.

THOMAS M. ROYAL & COMPANY • Philadelphia 20

BOSTON • CHICAGO • SAN FRANCISCO • BEAUMONT • ATLANTA • PITTSBURGH • NEW ORLEANS
DENVER • SEATTLE • NEW YORK • ST. LOUIS • DAYTON • DETROIT • SYRACUSE • BRYN MAWR

OWENS-ILLINOIS GLASS COMPANY
GENERAL OFFICES - TOLEDO, OHIO

Gaylord
Boxes

THE PRODUCTS OF LEADING INDUSTRIES MOVE ON ALVEY CONVEYORS



Thom McAn Shoes



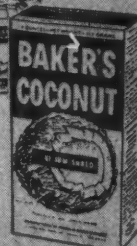
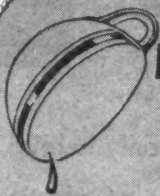
WRIGLEY'S



Phillips Brothers
WILLOW BROOK FARMS



Maxwell House
Coffee



FOUR
ROSES



ALVEY

ST. LOUIS

Conveyors

ALVEY CONVEYOR MANUFACTURING CO., 3201 SOUTH BROADWAY, ST. LOUIS 18, MO.

"PLASTICS STOCK MOLDS

*has paid for itself
a dozen times over!"*

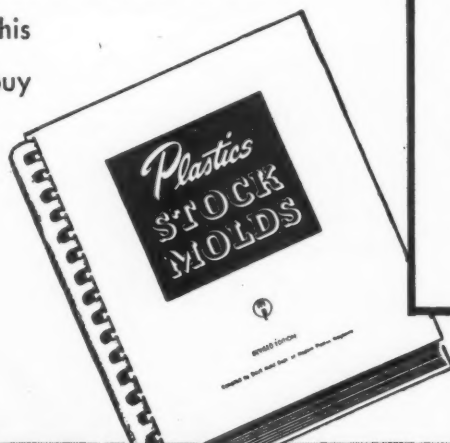
● "Yes, that is a true statement! This catalog 'Plastics Stock Molds' is worth more than its weight in gold to me. Why? Because it leads me directly to ready made molds of practically everything I want in plastics — closures, dozens of 'em, boxes, novelties, etc."



You, too, will find Plastics Stock Molds not only helpful, but vital. It contains nearly 1600 clear photographs of plastics made in available ready made stock molds. Contains nearly 200 standard extruded shapes—including for the first time a comprehensive standardized index of extruded parts. Contains a directory of stock laminated sheets, rods and tubes. Every item in the book is cross indexed by the name of the manufacturer and also by subject. You can use this book as a direct mail order catalog to buy every type of plastic part listed in the box on this page — and more!

Flashlights
Shaving Accessories
Textile Accessories
Hair Ornaments
Cosmetic Containers
Trays
Office Equipment
Frames
Household Products
Lamp Bases & Accessories
Plumbing Hardware
Electric & General Hardware
Clock Cases
Medical Applications
Boxes & Containers
Handles
Closures
Knobs
Smoking Accessories
Games & Novelties
Jewelry

*Compiled by
Stock Mold Department,
Modern Plastics Magazine*



\$5 per copy.
(foreign \$6.)

PLASTICS STOCK MOLDS

122 East 42nd Street

New York 17, N. Y.

And Still They Go Overseas!



those millions of containers
you are sacrificing
for our boys abroad

Today our production is still geared to the needs of the Armed Forces. Those shipping containers you could use in your business go overseas... packaging vital food, medicine, clothing, machine parts and ordnance for those who need it most—carrying the articles our men and our allies need to finish the job so that our boys can come home.

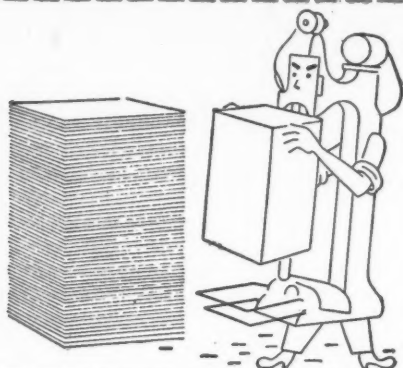
When our war job is finished we will resume our prompt deliveries of shipping cases, folding cartons and containers vital for the jobs of peace... for containers are messengers of mercy today and will be co-pilots of commerce again tomorrow.

V3C

ATLANTA PAPER COMPANY

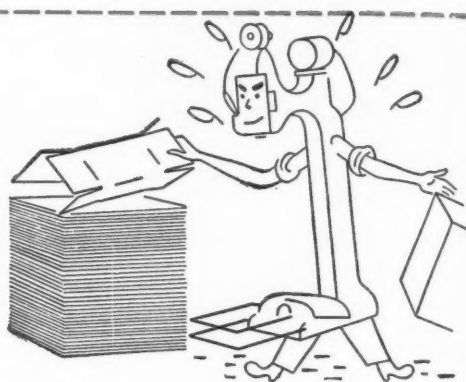
Atlanta
Established 1868

CONFESSIONS OF A CARTON STITCHER



"I've been stitching cartons for years—and I haven't had a vacation during all that time."

"And with all the war work my 'owners' are doing, it's getting steadily worse. I'm sure busy."



"But I feel pretty proud of myself because I overheard the boss say he'd be sunk without me."

Note: We also manufacture a complete line of book, steel, metal and aircraft stitchers. Sales and Service Representatives in all principal cities in the United States and Canada.

MORRISON STITCHING MACHINES

SEYBOLD DIVISION

HARRIS-SEYBOLD-POTTER COMPANY, DAYTON 77, OHIO

HARRIS-SEYBOLD-POTTER CO., DEPT. MP845
819 WASHINGTON STREET, DAYTON 77, OHIO

MP845

Please send information and complete specifications on Morrison Carton Stitchers

Name.....

Company.....

Address.....

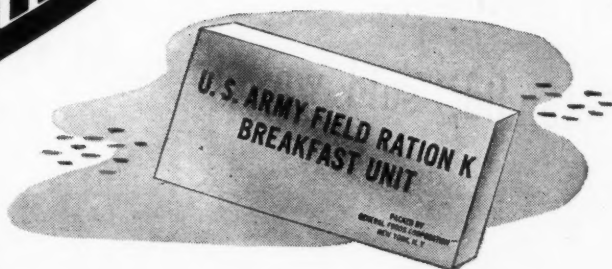


The Package of The Future



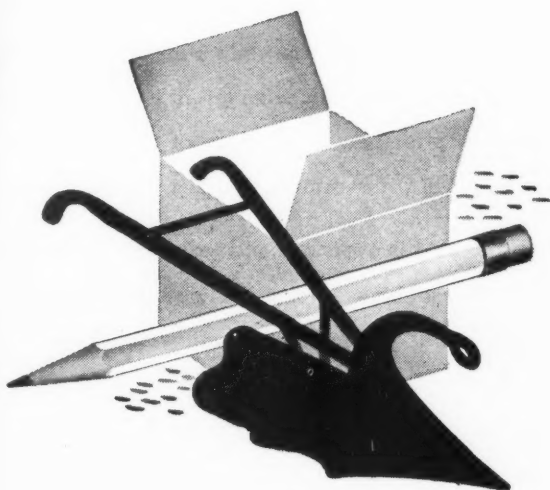
In 1896

This famous package took the cracker out of the barrel. Made by Gair, it was the paper box that actually revolutionized food merchandising.



In 1942

This noted package took the balanced ration of the mess hall into the fox hole. It provided a hazardproof meal under any emergency. Tens of millions of these life saver containers were manufactured by Gair.



In 195?

Tomorrow's packaging problems are being solved today by Gair ingenuity. The principles of packaging that are meeting rigid wartime standards, will be utilized in packaging everything from pencils to plowshares.

For 80 years, Gair

has been a major contributor to the scientific art of packaging. Many of the great industries of America and the world have turned to Gair to solve their packaging problems. Many an obscure product has achieved international distribution due to the ingenious packaging ideas of Gair. The paper box for Uneeda Biscuits back in 1896, is but one example. And out of the necessity of this great war, Gair engineers have developed amazing contributions in packaging everything from blood plasma to airplane parts.

• *Make your postwar packaging plans now and gear those plans to Gair.*

SAVE WASTE PAPER

ROBERT GAIR COMPANY, INC., NEW YORK • GAIR COMPANY CANADA LIMITED, TORONTO

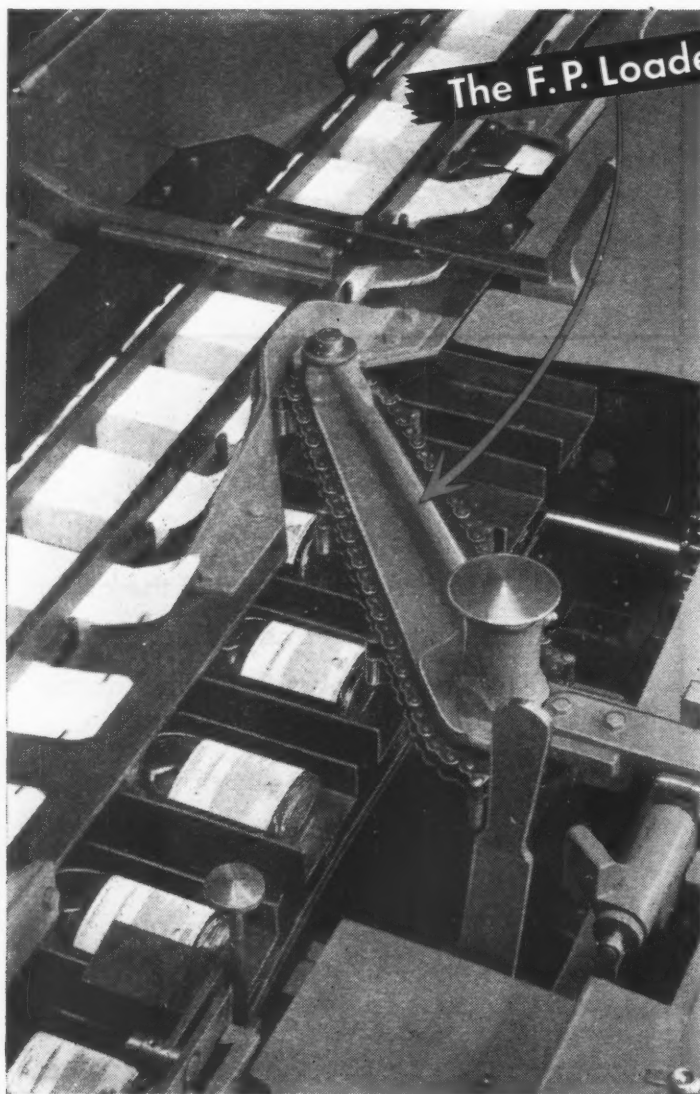
Folding Cartons • Box Boards • Fibre and Corrugated Shipping Containers

AUGUST • 1945

81



"My machine," said the inventor, "has no less than 7,916 moving parts."
 "Splendid," said we, "it ought to be a real asset in some museum."



The F.P. Loader... .. is simple and efficient !

This patented unit performs the vital function of inserting the load into the carton. For bottles, jars, soap, razor blades and comparable articles, it is the simplest, fastest, most gentle and *the most satisfactory* loading mechanism ever devised.

It hasn't a single cam, eccentric, slide or slide bearing to wear or get out of order.

It does not extend beyond the frame of the machine, and takes no more room than a man's forearm. With its constant, rotary movement it is unequalled for speed and for gentle handling of the load. Even at speeds of 200 per minute it is just "loafing."

If the load is oversized and resists entering the carton, the machine automatically stops and the F. P. loading arm automatically swings back out of the way. This prevents any jamming or breaking of the load and allows the operator to remove the defective piece immediately.

Most of America's automatically cartoned products are Jones cartoned—let us show you how efficiently they operate.



R. A. JONES & COMPANY, INC.

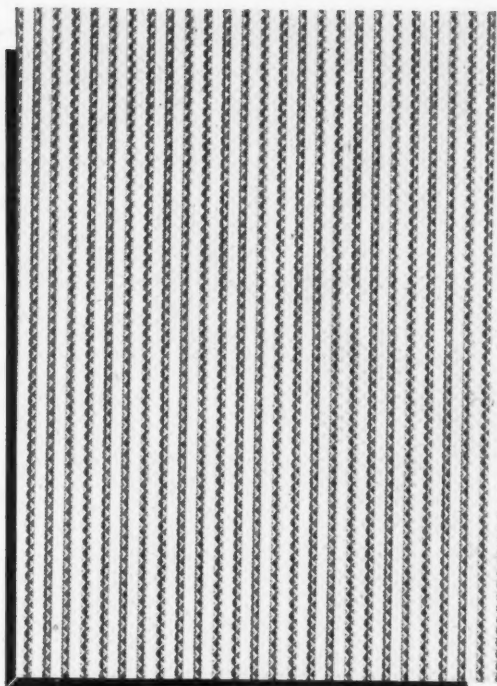
P. O. Box 485

CINCINNATI, OHIO

THIS SPECIAL PAPER

Available

- 150 Reams in Stock for
IMMEDIATE SHIPPING
- Sheet Size: 32 $\frac{1}{2}$ " x 26"
- Facilities for Reducing
SHEET SIZE TO SPECIFICATIONS



JUST one of the many decorative papers manufactured by Kupfer. We offer to the packaging industry unusual patterns, textures and colors, both stock and custom-made. Kupfer specializes in the creation and manufacture of trade marked papers, widely used by leading merchandising establishments.

KUPFER BROS. CO.

Manufacturers of Surface Coated Papers

4 ASTOR PLACE, NEW YORK 3, N. Y.

Est. 1845

B O S T O N • R I C H M O N D • P H I L A D E L P H I A

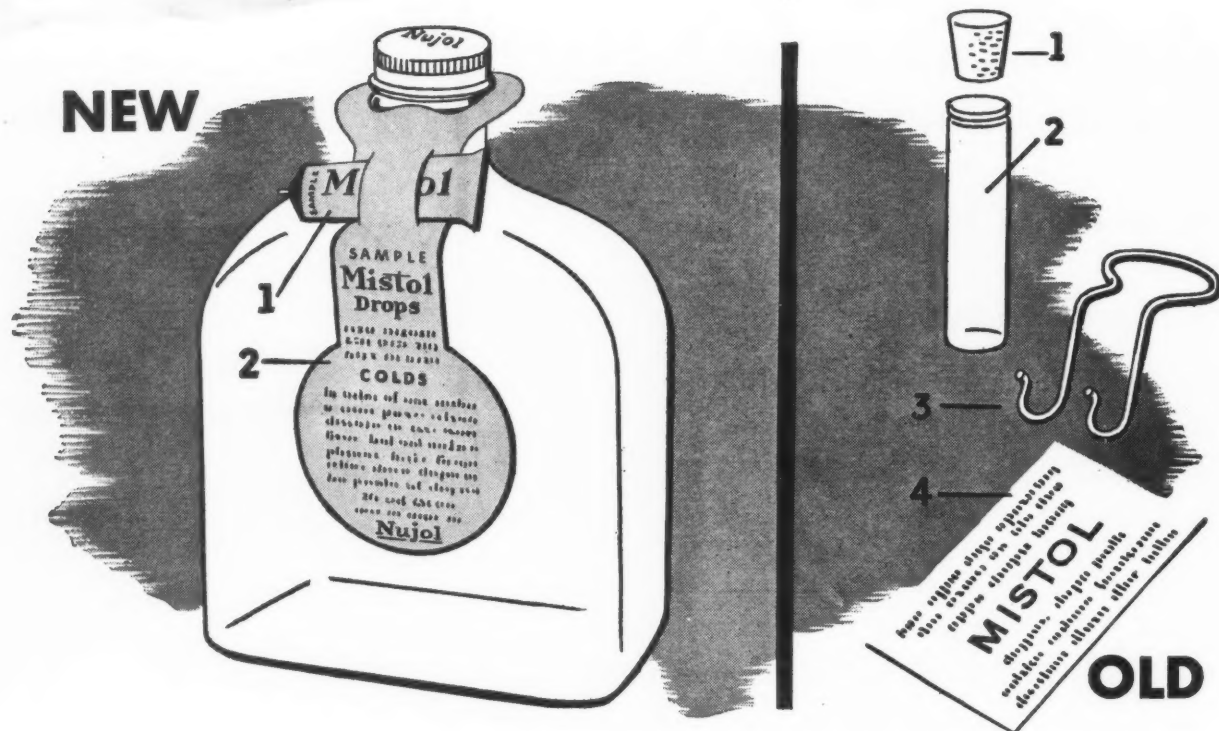
KUPFER BROS. PAPER CO.

145 WEST HUBBARD STREET
CHICAGO 10, ILLINOIS

Southwest Representatives:

MODERN PACKAGINGS
IRWIN-KEASLER BLDG., DALLAS 1, TEXAS

How Mistol made the sample simple



IT WAS A SMART IDEA, attaching a handy sample of Mistol nose drops to every bottle of Nujol.

But it didn't work so well — until they made the sample *simple*.

You see, the Mistol sample used to come in a glass vial, stoppered with a cork and attached by wire clips to the neck of the Nujol bottle. Complicated. Expensive, too. But the makers said goodbye to all that when they discovered Unitainer, the compact, attractive, collapsible tube with the airtight break-off pin closure.

Then, a single Unitainer and a single piece of paper could make up the sample package — complete with printed sales message.

So simple, the sample. Easy for dealers to handle, to display, to wrap. Easy for customers to use. And Mistol's purchasing agent *must* have liked it, because cost of the entire sample was greatly reduced.

Means simply this to you:

Perhaps you can adapt this tie-in sampling idea to one of your post-war products. But whether you'll use samples or not, Mistol's experience may help you solve your own packaging problem. Because it is a typical example of the countless ways in which Sun Tubes can be used. Our Unitainer is equally good for powders, liquids, pastes — it's even being used for paint pigments.

You know, of course, that the collapsible tube has certain unique, inherent advantages. You know that it's virtually unbreakable. That its contents won't dry out in use. That it's germ-proof and light-proof.

But did you know that new developments now make Sun Tubes ideal containers for products never before put into collapsible tubes? And that the ingenuity and resourcefulness of our packaging engineers can go to work on your problem — whenever you say the word?

Just phone or write the corporation's main office, 181 Long Ave., Hillside, New Jersey, or the Sun Tube representative nearest you.

SUN TUBE CORPORATION

Hillside, New Jersey

CHICAGO 1, ILL.
James L. Coffield, Jr.
360 No. Michigan Avenue

ST. LOUIS 1, MO.
M. P. Yates
Arcade Building

ST. PAUL 1, MINN.
Alexander Seymour
615 Pioneer Building

LOS ANGELES 27, CALIF.
R. G. F. Byington
1260 North Western Ave.



Complete

...as in Betner Service

Yes, sir, it's a *complete* packaging service that Betner gives—from idea to finished bag.

And available to you, all or part.

Is it frozen foods you're interested in? Or containers for retail or institutional use? Leading firms have found their answer in Betner Bags.

For frozen foods, coffee, cereals, flour mixes, powdered and dehydrated foods, etc., nothing has come along more satisfactory to progressive processors than Betner Bags. They want quick fill-and-seal, top moisture-vapor protection, a minimum of packaging equipment. They demand

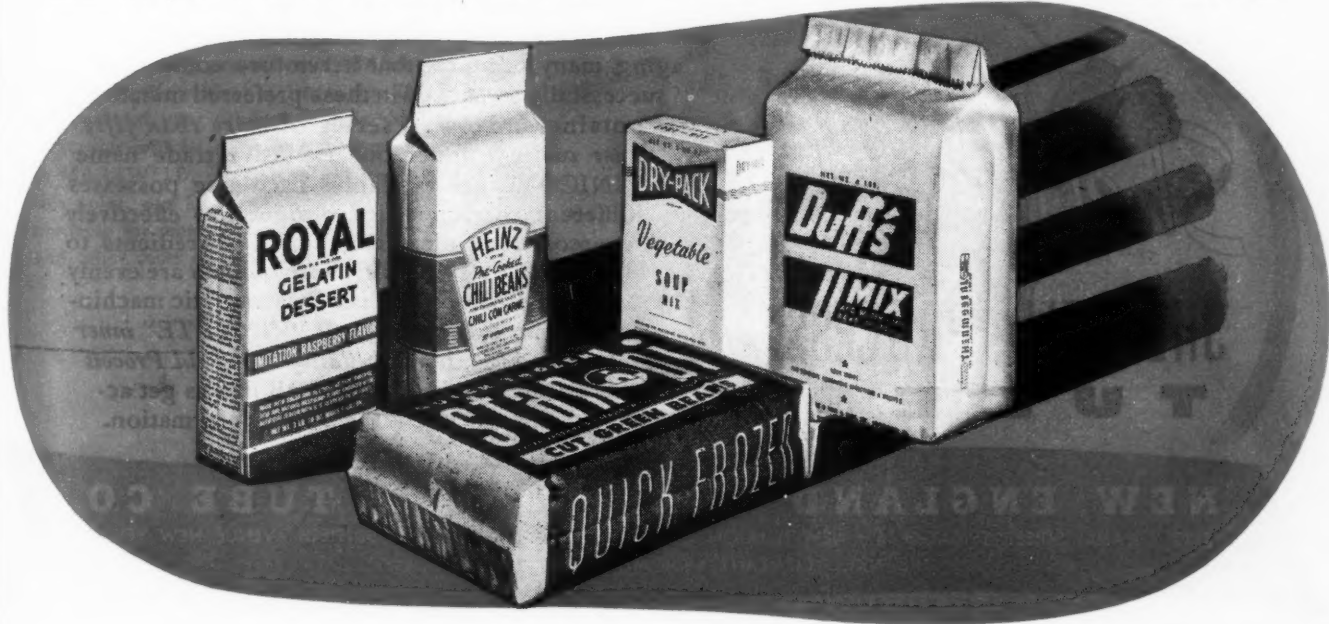
insurance against leakage, seepage, loss of flavor. They get 'em all with Betner Thermoseal and Lamofilm Bags.

A complete bag service is on call here. Idea men, art staff, printing presses, bag-making machinery at your command—or any part thereof. Write us about your problem, present or postwar.

Benj C Betner Co

DEVON, PA.

Benj C Betner Co of California, Los Angeles, Cal.



WHEN TUBE METAL IS UNDULY
EXPOSED TO
CORROSION



SPECIFY..

Vinicote

TRADE MARK

Sheffield Process **TUBES**



The New England research staff has scored a notable achievement! They have made possible the use of convenient collapsible tubes for packaging many products that heretofore could not successfully be packed in these preferred metallic containers. Now, a series of *more than fifty inner coatings* under our exclusive trade name VINICOTE, are available. Each one possesses different characteristics, designed to effectively overcome chemical reaction of ingredients to tube metal. VINICOTE *inner coatings* are evenly and economically applied by automatic machinery of our own design. If "VINICOTE" *inner coatings* and tougher "Sheffalloy" Sheffield Process Tubes are strangers to you, by all means get acquainted with them now! Write for information.

NEW ENGLAND COLLAPSIBLE TUBE CO.

3132 S. CANAL STREET, CHICAGO 16 • NEW LONDON, CONN. • W. K. SHEFFIELD, V. P., 500 FIFTH AVENUE, NEW YORK 18
THE WILCO COMPANY, 6800 MCKINLEY AVE., LOS ANGELES 1

"MARAWELD"

..... a triple-ply
laminated sheet
developed for
superior protection



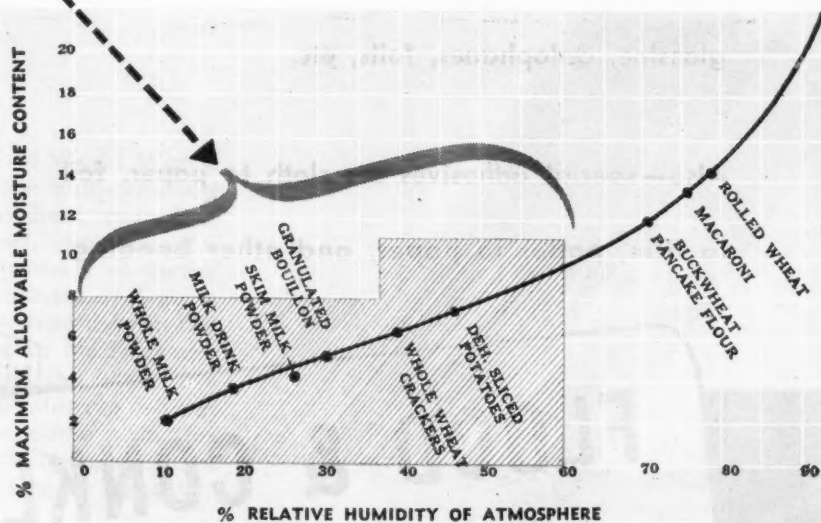
"Sheet W-210" was developed by Marathon technicians in answer to the Army Quartermaster Department's search for a Ration K overwrap with an extremely low moisture transmission rate. Now protecting Army rations in the Pacific area, it will soon be available for civilian packaging under the trade name "MARAWELD."

MARAWELD, a triple-ply combination, includes a sheet of aluminum foil, enclosed between two other protective papers. The special Marathon laminating agent, plus over-waxing, adds additional moisture-vapor proofness. Ideal over-wrap or inner-wrap. Unwaxed, other grades of MARAWELD are splendid for bags and liners. Tests record one of the lowest m.v.t. rates of any flexible packaging material.

MARATHON CORPORATION
MENASHA, WISCONSIN

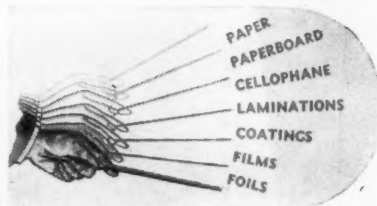
* RANGE OF APPLICATION

To the right is a composite curve showing the critical moisture absorption points of several food products. Products which fall within the shaded area demand protection equal to the moisture-resisting properties of MARAWELD. If the critical moisture-absorbing point of your product falls in this area, you will be definitely interested in MARAWELD. If you do not know this point, our laboratory facilities are available for making humidity equilibria and other tests of your product.



MARATHON

BUILDS PACKAGES FROM A COMPLETE RANGE OF PROTECTIVE MATERIALS





HEAT SEAL COATINGS

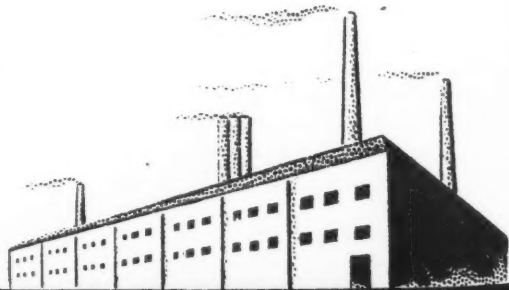
of

Special Importance

#271-N — Especially formulated for strong anchorage to glassine.

#425—Low temperature heat-seal especially adapted to 2 and 3 ply laminations. Excellent adhesion to such difficult surfaces as waxed glassine, cellophanes, foils, etc.

Also—special adhesives for cloth to paper, foil to film, paper to paper, and other bonding.



FLOOD & CONKLIN MFG. CO.

Coatings of Scientific Reliability

NEWARK 5, NEW JERSEY



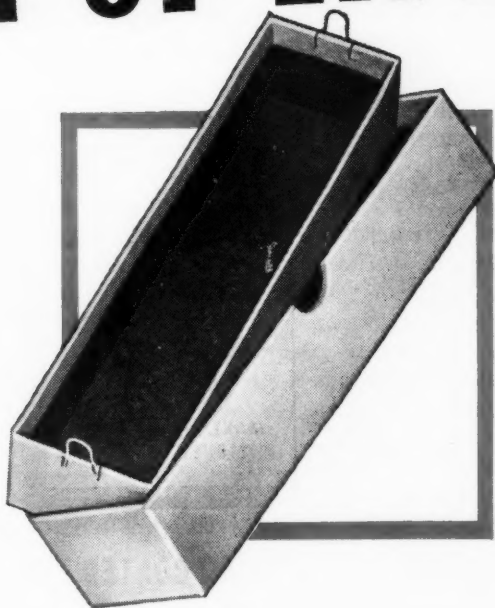
Photo U. S. Signal Corps.



FOUNTAIN OF LIFE

Wounded warriors of World War II are granted a new lease on life by the pain-relieving hypo-syringe — protected in transit from manufacturing plant to patient by compact, conveniently-sized Mason MailMasters. This instrument of mercy is but one of hundreds of small products and parts assured of safe, sure delivery . . . because they nestle in light-weight, though rugged, Mason MailMasters.

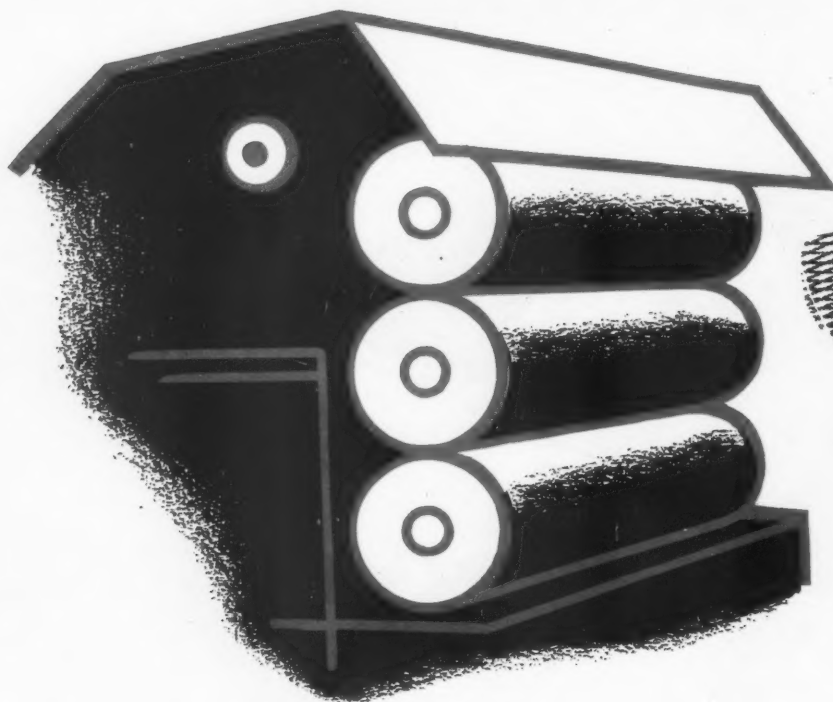
Once Japan is meted the same fate as Germany, Mason MailMasters will return to civilian service. So, in formulating your peacetime plans for domestic or overseas shipment, give full consideration to this economical container that is ideal for assembly line packaging.



The **MASON BOX COMPANY**

ATTLEBORO FALLS, MASS. — 175 5TH. AVE., NEW YORK

NASHUA WRAPPERS are a sum* total



RESEARCH

Research is not new with Nashua. For years we have maintained extensive research departments in charge of competent specializing chemists. Our object has been two-fold — first, to establish procedure to formulae with established standards and check stages governing materials and operations — second, to seek constantly for improvement and to extend the service fields of our products.

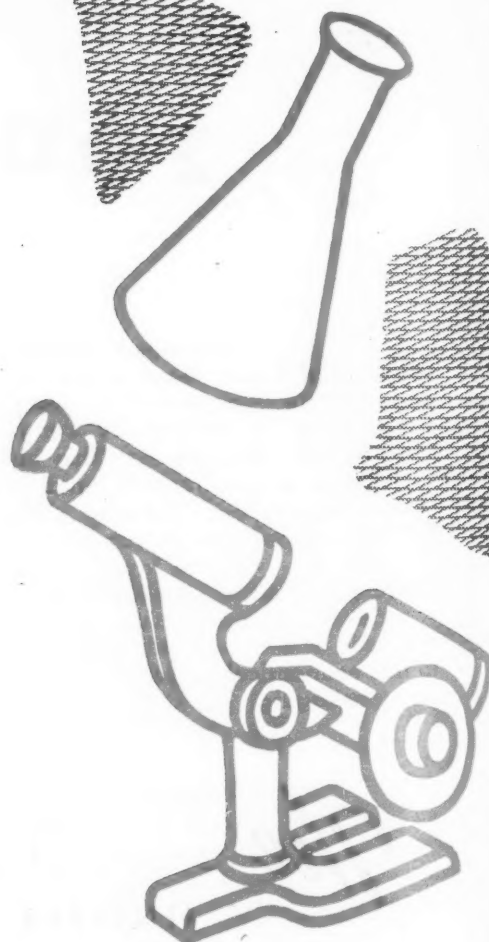
Nashua wrappers are the result of careful planning and constant vigilance.



NASHUA GUMMED AND COATED PAPER COMPANY

Nashua, New Hampshire

* **EXPERIENCE, EQUIPMENT
ORGANIZATION
VERSATILITY, RESEARCH
CONTROL**



MODERN PACKAGING

VOLUME 18

AUGUST, 1945

NUMBER 12



PHOTOS, RAYMOND LUEWY ASSOCIATES

1—Armour will introduce its new trademark in September when this striking new "Treet" package will be publicized nationally to grocers and food dealers. 300 more new packages are in final development stages.

Armour to shine on 500 packages

Hundreds of new packages soon will be rolling out of Chicago carrying the familiar name of Armour and Co. to the homes of America's millions. The basic element of the program is a new trademark destined to become a memorable symbol to the food-buying public.

The debut of this program—reported to be one of the greatest changeovers of product labels, wraps and container designs ever effected in the meat packing industry—will be made in September when a new package for "Treet" will be publicized nationally to grocers and food dealers.

Release of redesigned packages for some four to five hundred items will follow the "Treet" presentation as fast as packaging materials are used to avoid waste in wartime. To date about 300 of the new packages are in the final stages of development.

This program is the culmination of more than five years study of merchandising trends that call for this step in view of the satisfactory sales job performed by packages in current use. Many months were also devoted to working out the basic feature of the design and its adaptation.

First consideration was the trend to more complete self-service stores after the war. There was a time when the

manufacturer could depend upon the retail grocer to push certain items by suggestion. Manufacturers "traded rather than merchandised their goods." The self-service grocery has changed all that and is expected to change it even more after V-J day. Today the housewife determines to a larger extent what food products go into her grocery basket, because she picks them off the shelf herself without the aid of a clerk. Accordingly, the package must now carry a much heavier share of the merchandising load.

Brand preferences are built up for the housewife by national advertising. Recent surveys among retail grocers show that women shoppers prefer nationally advertised brands of food products in a ratio of about three to two in many items of comparable products. The war has not, therefore, changed their interest in selecting the brands of well-advertised manufacturers. Quick brand identity via the package at the point of sale was thus recognized by Armour as imperative in the postwar merchandising picture.

The two important factors that motivated the Armour package changes then were self-service and faster brand identification—changes that sell the shopper at the point of sale.

Labels do a positive selling job, for each is a miniature bill-



board. They must also be suitable for mass displays, where a solid unit of selling appeal is desired.

The task of creating a systematized style of design was entrusted to one of the country's leading industrial design organizations. The first step undertaken by the designers involved an overall study of the problem, including shelf preferences of the average dealer, effectiveness of various types of packages on store shelves, relative prominence of manufacturer's and product name, the clarity of descriptive matter, overall recognition value of the package as a unit, merchandising methods by food manufacturers of all kinds.

The general conclusion of this research was that meat packers' packages had in the past tended to subordinate the identity of the firm to the quantity of selling matter.

The following basic policy was established as a guide to the entire packaging program:

1. Development of a strong recognition symbol or trademark to occupy a dominant position on all packages.
2. Clear-cut presentation of product name.
3. Descriptive matter to be reduced to a minimum—limited to product use, recipes and necessary product listing as required by government regulations. (Inspection marks are also carried on packages that require them.)

Following the setting up of this basic policy, the full line of current packages was analyzed in the light of these criteria.

After this analysis, recommendations were made for basic elements to be included. These provided for:

1. A basic trademark to dominate every package.
2. A product type face and style to be carried throughout the entire line for overall family relationship. This type face was specially designed for the purpose.
3. Standard type faces for descriptive material appearing on the labels, containers and wrappers.

The trademark adapted for all the packages consists of the word "Armour" printed in reverse on a rectangular background with rounded corners. The Armour Star is tangent to the upper right-hand corner of the rectangle.

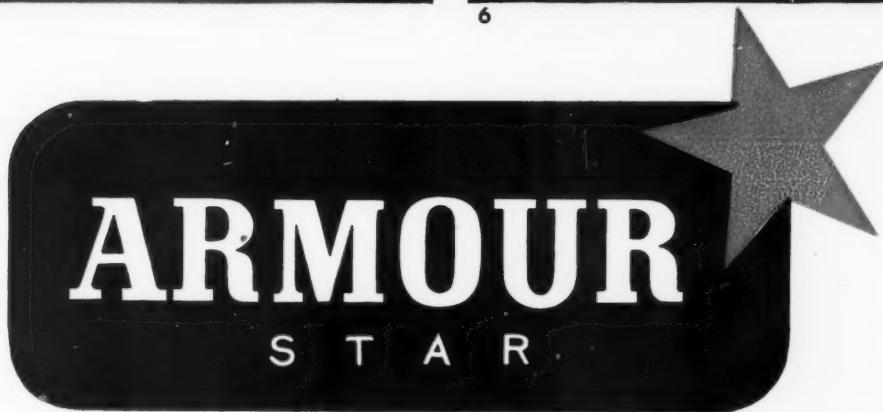
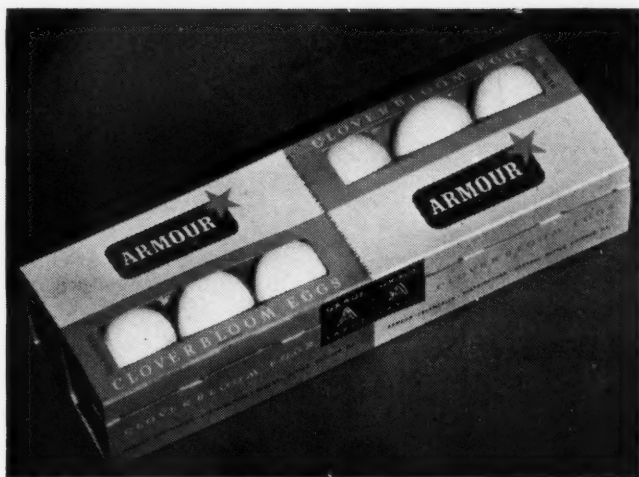
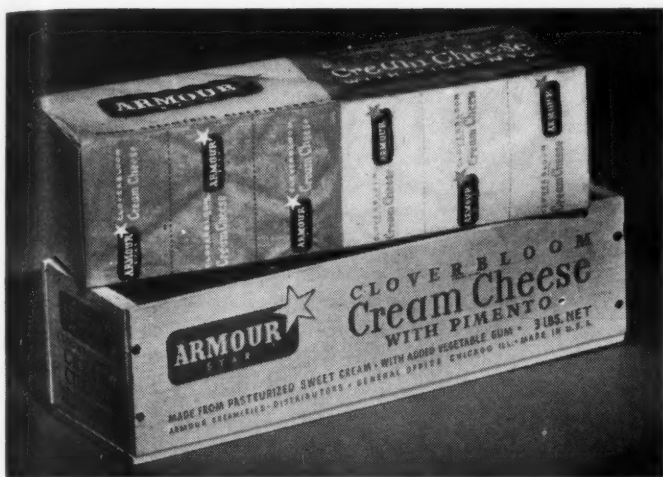
The specially designed type face was turned over to expert typographers, who developed it in sets of alphabets of proper sizes for the various packages and who supply proofs of finished words in this face as needed for engraving reproduction. Treatment of descriptive matter also was worked out in conjunction with another typographer in such a manner that all listings, product descriptions, menus, etc., may be reduced to a definite formula on each package.

This procedure assures uniform treatment so that each package relates to others in the line. Specifications for trade mark and type are documented and filed for reference to keep the entire treatment the same throughout.

Next step in design procedure was the planning of several packages from the standpoint of overall package character to arrive at a basic design adaptable to all types of packages.

Key products, representing several of those from each of the company divisions, were chosen and the test designs applied to them. After this step, it was possible to proceed with the designing of other packages of different sizes and materials in each group. Can and jar labels, cellophane and parchment wraps, various types of product, display and

2—In consumer tests women were enthusiastic about large transparent area for viewing quality of packaged sliced bacon. 3—Cedar red is identifying color in smoked meat group several of which are shown. 4—Note design variation to distinguish smoked from cooked ready-to-eat ham.



The Armour trademark printed in maroon appears on white portion of basic design. The star always changes to divisional product color used on lower half of package. Blue star shown here is color used on dairy product group. 5—Cream cheese package shows how trademark is adaptable even to shipping boxes. 6—Egg carton shows effective simplicity of design elements. 7—The consumer butter carton. 8—An institutional package of butter squares.

shipping cartons were typical of the package forms to which the design had to be adapted.

A key to the color problem was found in the company's own divisional set-up including what are termed provisions, canned meats, refinery products, pharmaceuticals, cosmetics. Previously the company's packages had no distinctive color treatment by divisions. Blue and yellow were used mostly.

Examples of some of the colors selected are as follows:

Smoked meats—cedar red

Fresh sausage—burnt orange

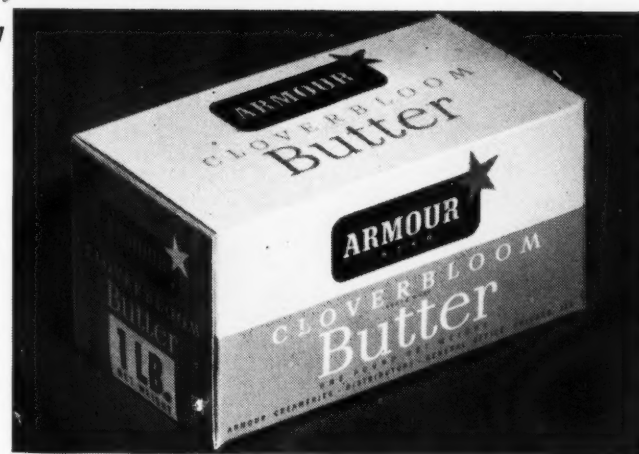
Refinery products—lard, spring green to suggest coolness rather than to connote hot grease; margarine, yellow; shortening, sea green.

Canned meats—Claret red

Dairy products—blue

In the selection of these colors, special attention was given to their psychological values. Since women are reported to do about 90% of the food buying for the nation, an attempt was made to use colors known to have feminine appeal. Also in contrast to the prevalent use of primary colors in food packaging, muted tones were chosen—colors softened by the use of white or mixed with gray. Such color tones, it has been shown, reflect more light and do not tend to appear dark, as primary colors might, even in poorly lighted positions.

The basic Armour design calls for an approximately even





9—Trademark dominates package, but in every case there is clean-cut presentation of product name, easy to see.

10—Even on a wrap with all-over printed background, the trademark predominates as effectively as it does on the undecorated background of the Genoa Salami package.

11—Design is as adaptable to large areas as it is to small ones. Bacon wrap illustrates large area treatment.

division of each package and wrap into white on one side of the largest surface with color on the other. The white portion carries the new Armour trademark, which is printed in maroon. Product name is printed on the color portion of the package. The word "Armour" and the basic product name are thus the main elements that meet the eye. The Armour Star used at the upper right-hand corner of the trademark always changes to the divisional product color used on the other half of the package. This effect is one of simplicity and organization. This basic treatment is followed with only minor identity variations throughout the line.

All colors have been specified by ink formulae, documented by manufacturer's name and number to assure uniformity.

It was hoped originally to launch the packages by divisions, but this plan had to be abandoned in view of present shortages of paper stocks and other packaging materials. The butter carton, for instance, requires a white sulphite board which is at present unobtainable. Present stocks will be used for the sake of practical economy and the new packages will gradually supplant their predecessors as the latter are exhausted. This will be done by groups of products as far as possible.

The packaging program was under the direction of F. W. Specht, Armour vice-president and general sales manager, and was a cooperative effort throughout the various divisions. Sampling tests were run constantly within the organization on different designs and the home economics staff, headed by Marie Gifford, made several consumer tests. One of the company's consumer tests was conducted in Atlanta for the new sliced bacon cellophane and opaque combination wrappers.

The women were enthusiastic about the visibility given to the bacon due to the large transparent area provided for viewing the quality of the product and about the appearance and colors used. Some commented about the recipes on the back of the package and many liked the new trademark identity.

Another very interesting part of the program was the production schedule set up by the designers. While this could not be closely followed under present conditions of material shortages and delays, it is a good example of how the scheduling of a packaging project may be maintained normally.



A primary block type of schedule showing the overall development listed the general types of packages by groups and charted the progress made within each group of packages month by month. Test packages in work for various items in each division were listed on this chart, which specified: (1) the time for production drawings; (2) time for plates, checking of color proofs, etc.; (3) time for distribution of packages, wraps, etc., to company branch offices.

In addition, a detailed schedule tracing the progress of each individual package was maintained on a visible index system based on a card file keyed with colored tabs. With this schedule, it is possible to trace a package through every stage of development until final approval by the client.

Armour and Co. plans to merchandise the new packages in a broad dealer and consumer program. This two-way sales program will be as follows: The company's national newspaper, magazine and radio advertising will introduce the packages to the American housewife, emphasize that it is easy-to-identify, easy-to-use. Billboard advertising in full color and truck posters, seen by millions daily, will continue the visual emphasis and pre-selling suggestion behind the products featured in accordance with the company's scheduled product advertising. Point-of-sale material, such as window and wall posters, counter and price cards, will be built around the new packages in full color. This will show the housewife that her food dealer's store is headquarters for the newly designed and packaged food products she has been reading about and hearing of by radio. National trade paper advertisements will tell the package story to dealers. Salesmen will be aided in telling the story by means of suggesting display ideas to stores. Company letter-heads and other pieces of printed matter will also carry the new trade symbol.

An interesting commentary on the appeal the new packages have for women buyers was by Hedda Hopper in her column which is read by 15,000,000 people daily. Speaking of the new butter carton, she said, "It looks like a cologne box rather than just another butter carton. And that is bound to appeal to women." And that's a point Armour believes is worth striving for.

CREDIT: Design program: Raymond Loewy Associates, New York and Chicago.

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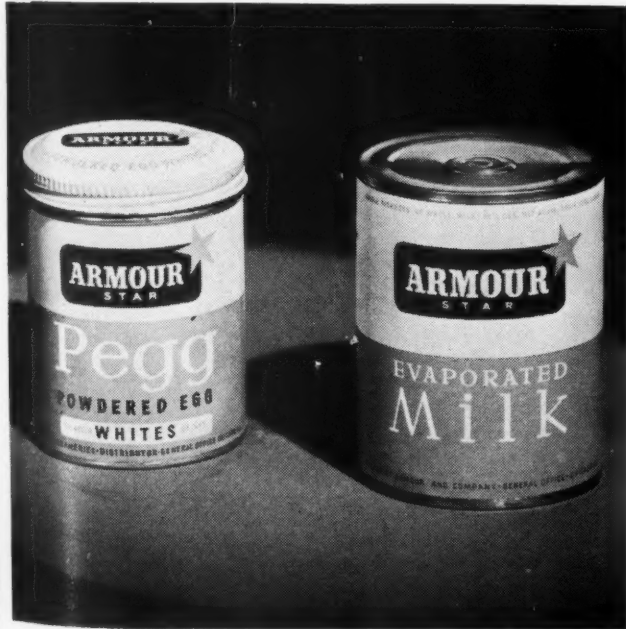


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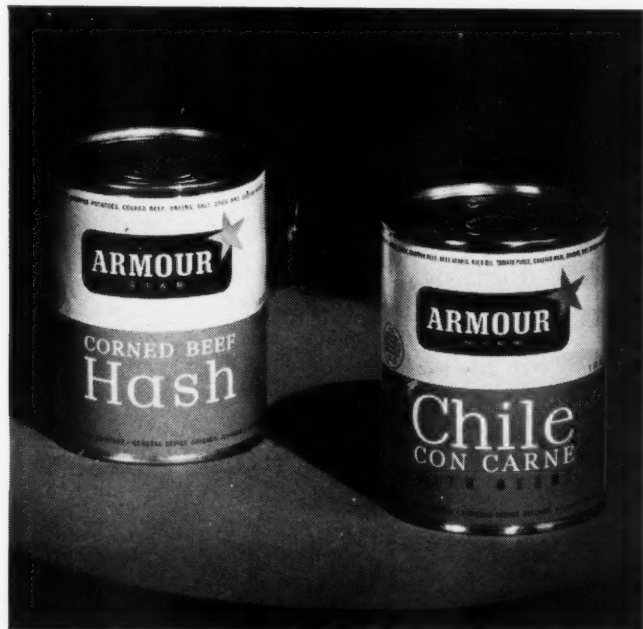


12 & 13—Fine parallel lines over a white surface provide the distinguishing feature for refinery products such as oleomargarine and lard. Spring green is used for lard package; yellow for margarine. 14 & 15—The basic design elements are as effective when applied to can and jar labels as they are for other package forms.

14



15



Engine bags of new vinyl-foil material

A new and important water-vaporproof packaging material makes its advent with the adoption by the Army and Navy air forces of a vinyl-foil-vinyl-cloth lamination for engine bags, replacing the Pliofilm envelope which has been used since the start of the war.

An impelling reason for the change is the growing shortage of natural rubber, from which Pliofilm (rubber hydrochloride film) is made. The nation's stockpile of crude rubber has dwindled below the "danger line" set in the original Baruch Committee report. Elimination of Pliofilm from the aircraft engine and parts program is expected, according to unofficial estimates, to save 70,000 lbs. of natural rubber a month.

While it lacks the advantage of transparency, the new material has a lower water-vapor transmission rate. Permissible WVTR for Pliofilm has been 0.25 (grams per 100 sq. in. per 2 hrs.), while the new Specification AN-B-20 sets the maximum rate for the new material at 0.05. Actually, the foil barrier shows up in tests well below that figure and the manufacturers state that average test results are between 0.01 and 0.02 grams.

The new engine bags are currently being made from the same blueprints as used for the old ones and they are handled and heat-sealed in much the same manner in the Method II dehydrated pack. AN-B-20 still provides for Pliofilm bags, which it designates as Type I, but engines are now being shipped to the Pacific in the new or Type II material and the Air Technical Service Command at Wright Field states that all procurement of Pliofilm for engine bags will cease during August.

One material each from two manufacturers has so far qualified under the Type II specifications, which call for "at least one ply of a metal foil laminated to organic films, cloth or paper or a combination thereof so as to produce a sheet that will comply with the requirements specified herein." These requirements are such that it appears that, with availability taken into consideration, only combinations of

metal foil (for water-vapor resistance), vinyl or other plastic film (for heat-sealability and foil reinforcement) and cloth (for strength and abrasion resistance) will qualify.

This development is of interest to every packager using any of these materials, for the requirements of the aircraft engine program are so immense as to make questionable the future supply of these materials for civilian packaging. The procurement agencies refuse to estimate future production of the new lamination, saying merely that they will take all that can be produced as fast as it can be turned out. But it is known that one manufacturer alone is now producing 800,000 yds. per month of the 35-in. material and expects shortly a volume of 2,500,000 yds. per month. It is a reasonable expectation that total production will reach 4,000,000 yds. a month, and that will require no less than 7,140,000,000 sq. in. of 0.001-in. foil each month.

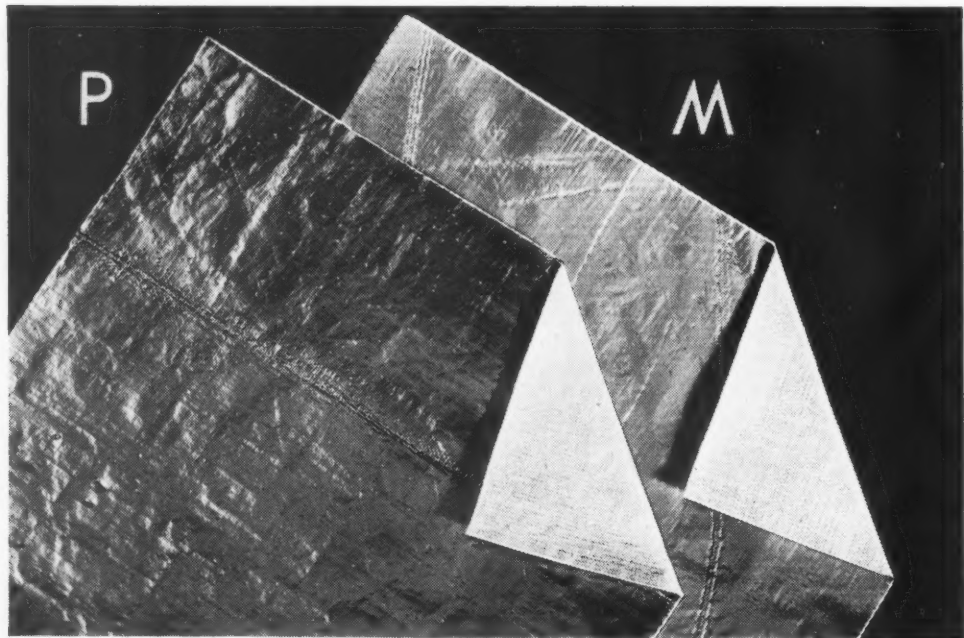
The two materials now being used, Plastin and Metalam, are very similar in their components and in their properties, but they are manufactured by different methods.

Plastin A-6004 is produced by casting a film of vinyl on both sides of the aluminum foil and adhering the scrim backing to one side while the vinyl film is still liquid. This operation is carried out in a 400-ft. continuous casting machine and drying oven. A 0.0015-in. layer of vinyl is cast on the foil and the scrim combined with it in a single operation; the material is then run through again and a top coating of 0.002-in. vinyl applied to the foil side.

Metalam 140 is a straight lamination of aluminum foil, sandwiched between two layers of 140-gauge (0.0014 in.) vinyl resin sheeting and backed on one side with scrim. The adhesive used is a synthetic, thermoplastic resin type.

Plastin has a characteristic silver color on its foil side, while Metalam is identifiable by its golden hue. Physical properties of the two materials, as stated by the manufacturers, are given in Tables I and II.

The principal water-vapor barrier is, of course, the alumi-



1—Camera study of two new vinyl-foil barriers, Plastin and Metalam (identified by initials). Surface is transparent vinyl over aluminum foil; cotton scrim backing is adhered to vinyl under-coating.

2—Completed engine is lowered into base of engine box. Care will be taken to keep barrier from being pinched. 3 and 4—Cross-section sketches illustrate structures of the new materials. 5—Casting machine and 400-ft. drying oven used in the production of Plastin, viewed from loading end, where foil and scrim are fed in. Two of these machines are now producing and two more are building.



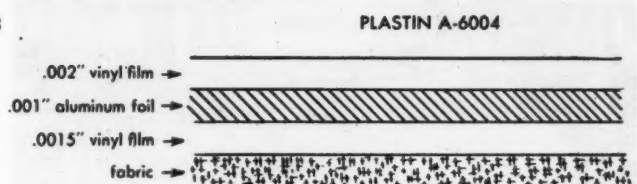
2

num foil. The vinyl film, in addition to providing the necessary heat-sealing surface, toughens the material to resist cracking when flexed and also serves to cover any pinholes that may occur in the foil. The cloth backing is required for extra strength and puncture-resistance on such large items as aircraft engines, and it also facilitates heat-sealing, but it is the feeling of the manufacturers that it will not be necessary for smaller items which involve lesser risk.

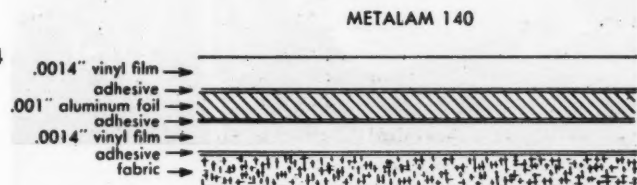
The exceptional resistance of this barrier to water-vapor transmission, together with its flexibility and heat-sealability, make it of considerable interest for postwar civilian packaging use. Variations of the product to suit it to food and tobacco packaging are now being studied. It will no doubt have many postwar industrial uses.

Development of the new engine bags has been under way for many months. Wright Field officers, who initiated the Method II dehydrated pack and were using Pliofilm engine bags before Pearl Harbor, foresaw after the war began that the supply of natural rubber was limited and that a substitute

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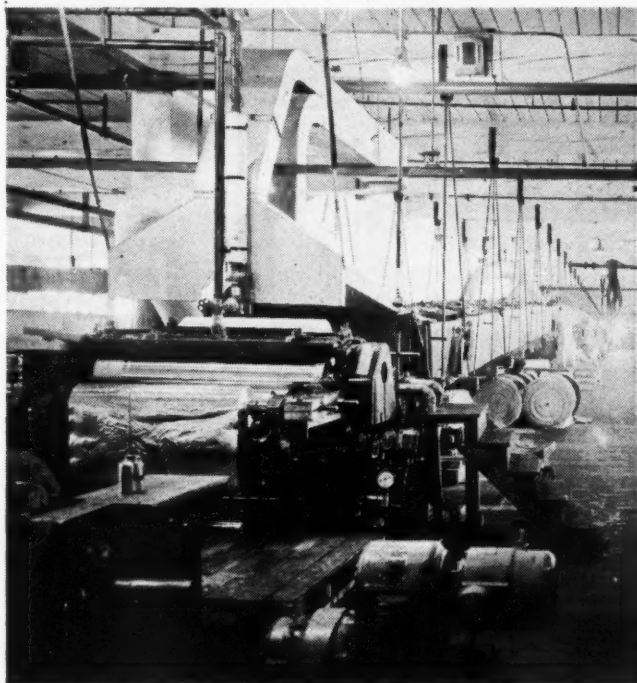
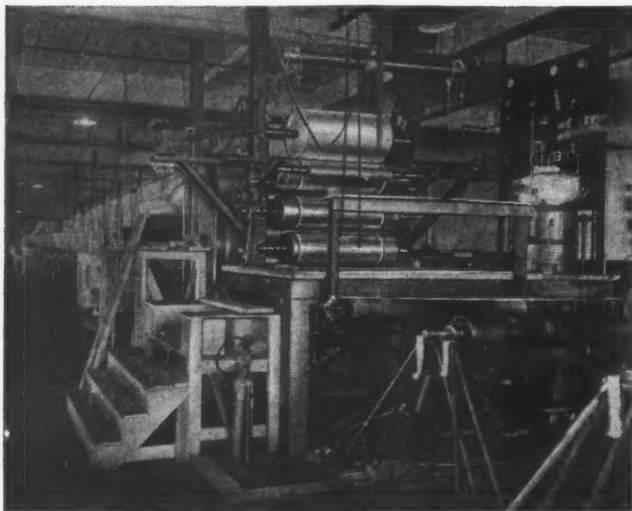


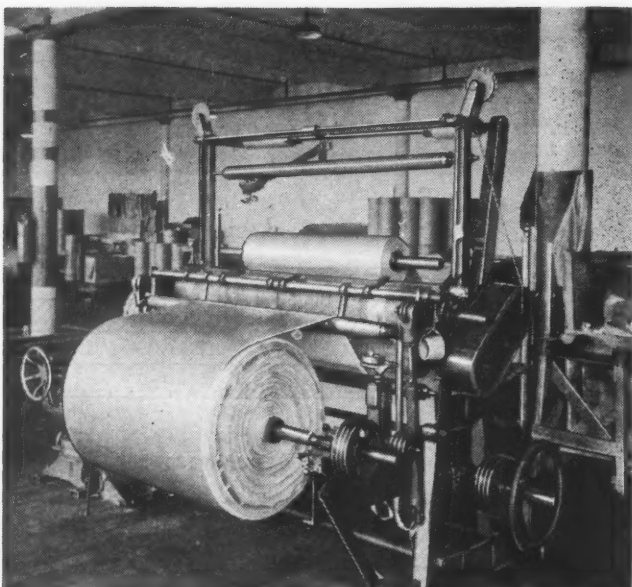
TABLE I—PHYSICAL CHARACTERISTICS OF PLASTIN A-6004*

Tensile strength, per in. width.....	35 lbs.
Elongation.....	6%
Bursting strength (Mullen).....	108
Tear strength (Elmendorf).....	.947 gms.
Temperature range.....	—40 deg. F. to 180 deg. F.
Dimensional stability.....	good
Blocking.....	none
Resistance to aging.....	very good
Resistance to salt spray.....	excellent
Resistance to solvents (except ketones).....	excellent
Resistance (on face) to:	
Weak acids.....	excellent
Strong acids.....	good
Weak alkalis.....	excellent
Strong alkalis.....	excellent
Greaseproofness.....	zero penetration
Water-vapor transmission rate.....	0.02 gm./100 sq. in./24 hrs. at 95% r.h.

* From manufacturer's data.



6



7



8

material would be needed. While development work was under way, the supply of Pliofilm was stretched as far as possible by reclaiming and reworking the film, but this conservation has by now about reached its limit.

Wright Field long ago developed a lead-foil lamination, but it was obvious that the supply of lead foil would not be adequate. A Saran barrier was developed, but it presented difficulties in heat-sealing. The heat-sealing has been licked, according to Air Force officers, with new types of electronic equipment, but meantime Saran has been totally allocated to other vital packaging uses. The new Method II pack using a steel can or drum as the barrier has been used on engines. Six "canned" engines were shipped to the South Pacific and came through in perfect condition, but the can was as heavy as the engine and its general use would be a heavy drain on the supply of sheet steel.

The combination of vinyl and aluminum foil in a water-vapor barrier had long been an idea in the minds of the Wright Field officers, but until recent months there had not been, in their opinion, a sufficient supply of foil in sight to warrant developing it. There was also a problem of getting sufficient flexibility in a foil lamination for use as a bag.

The manufacturers of Plastin were also working with vinyl-foil combinations, for which their equipment was well suited and they saw that the material had remarkable qualities. They demonstrated the practicability of producing a material of great toughness by adding a scrim backing, and their

6—Unloading end of the Plastin machine, showing laminated material being wound on reels. 7—Huge rolls of Plastin are trimmed on this machine and rewound into 250-sq.-yd. rolls for shipment to bag fabricators. 8—Properties of the material are rigidly controlled by laboratory tests. Photo shows an experimental heat-sealing of Metalam in a special motor-driven heat sealer with controlled temperature, pressure and dwell. 9—Static pull test to determine sealing bond. The specifications require 2 lbs. per in. width at 100 deg. F. for one hour.

PHOTOS 5, 6 AND 7 COURTESY PLASTIC FILM CORP.

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PHOTOS 8, 9, 10

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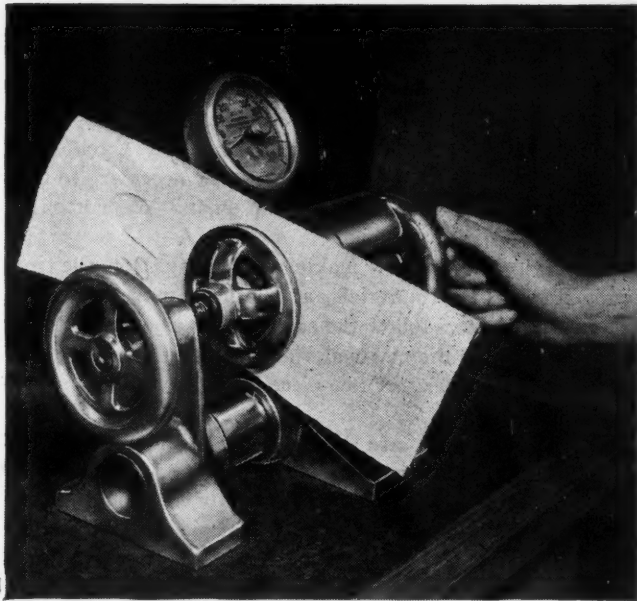
Corrosive Flammabi Aging prop Cold flexib Salt spray Solvent re

Heat-seali

* From m



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11

PHOTOS 8, 9, 10, 11 AND 12 COURTESY THE DOBECKMUN CO.

10—Blocking test. Stack of samples face-to-face must not block together under 3 lbs. per sq. in. pressure for 24 hrs. at 150 deg. F. **11—Bursting strength** is determined on Mullen tester. **12—Testing WVP rate** is GFWVPT cabinet. Only .05 grams per 24 hrs. per 100 sq. in. are permissible.

material was the first to be approved and put into use under the new specification.

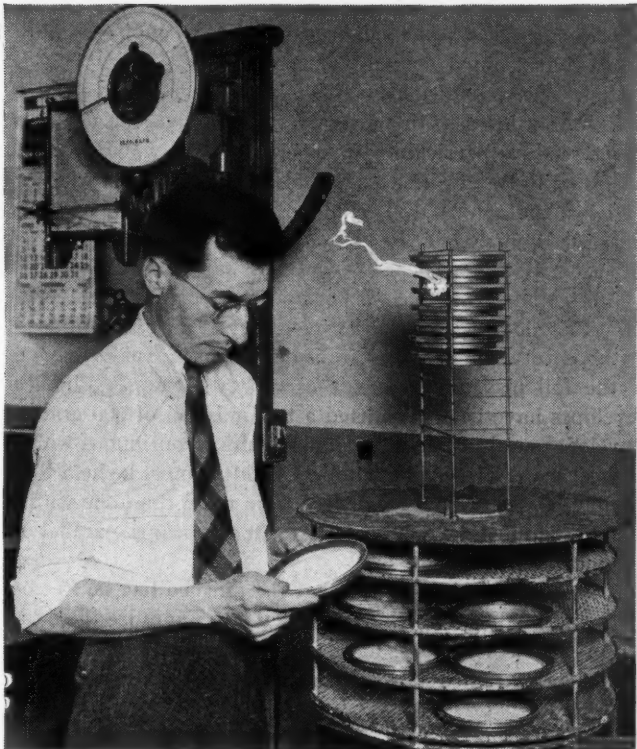
The Type II materials are not without their problems, but the Air Technical Service Command, working closely with the several converters and manufacturers, has been able to resolve most application difficulties. For the last few months

TABLE II—PHYSICAL CHARACTERISTICS OF METALAM 140*

Tensile strength.....	Machine direction—25 KG/in. width min. (55 lbs.); cross machine direction—17 KG/in. width min. (37.5 lbs.)
Elongation.....	Machine direction—3% min. (to foil rupture); cross machine direction—6% min. (to foil rupture)
Tear strength (Elmendorf) ..	Machine direction—500 gms. min.; cross machine direction—900 gms. min.
Bursting strength.....	70 lbs./sq. in. min.
Sealing strength.....	adequate to pass 2 lbs./in. width static pull test 1 hr. at 100 deg. F.
Water-vapor transmission rate.....	flat, creased or heat-sealed pieces, less than 0.05 gm./100 sq. in./24 hrs. at 95% r.h. (average 0.01 gm.)
Oil and grease resistance....	good
Dimensional stability.....	good (shrinkage at 180 deg. F./24 hrs. less than 1/2%—both directions)
Corrosive properties.....	non-corrosive (Spec. AN-B-20)
Flammability.....	non-inflammable
Aging properties.....	good
Cold flexibility.....	good at -20 deg. F.
Salt spray.....	good
Solvent resistance.....	excellent for alcohols, grease, oils and hydrocarbons
Heat-sealing resistance.....	good

* From manufacturer's data.

12



it has been mainly a question of getting sufficient production to permit a complete changeover.

All materials submitted under AN-B-20 are subject to testing and approval by the Naval Air Material Center in Philadelphia. Materials from three other manufacturers are now up for approval and, on the basis of preliminary data, probably will be accepted.

The specifications provide, in addition to the maximum limit 0.05 WVT rate, that the material shall not block at 150 deg. F., that it shall have a seal strength capable of withstanding a load of 2 lbs. per in. of length of edge seam for one hour and that it retain its properties to certain limits upon aging.

The vinyl sheeting used in Metalam is produced by Good-year, the manufacturer of Pliofilm. There is still available a stockpile of some 180,000 lbs. of reclaimed Pliofilm and although this material by reason of repeated reworking is no longer suitable for use as an independent barrier, it may be

possible to use it in place of the vinyl in the foil lamination. This step is under study.

There may be other changes as the program progresses, although the basic principles of the lamination are expected to remain unchanged. The program is currently threatened by a shortage of cotton scrim and it may be necessary to use rayon. A material containing 65% rayon and 35% cotton is currently under study.

Nine fabricators are now making engine bags from the two approved vinyl-foil materials, and others may come in. Although fabricators follow the same design as used for Pliofilm, they try with the new material to stagger seams so that no two come together. A two-piece bag is favored by some fabricators.

Currently the bags are being made without windows, which are usually used with an opaque Method II barrier to permit observation of the humidity indicator card. Extended tropic room tests showed that the new material was so efficient in WVT protection that, when an engine was properly prepared and dehydrated with silica gel as specified, there was little need to check on its condition in transit. If the barrier is properly sealed, there is apparently no possibility of its failure short of physical damage—which would be readily observable.

Under these conditions, it was felt that it would be unwise to invite an increase in the WVT rate through the use of a more readily permeable transparent window. However, according to Wright Field specification officers, a new window made of laminated ethyl-cellulose and Saran has shown remarkable impermeability and it may be incorporated later into the bag design.

Fabrication of the bags is covered by Specification AN-E-1b. This provides that when tested according to standard methods total water-vapor transmission for envelopes made of the foil material shall not exceed 200 grams. Pliofilm envelopes have been permitted a transmission of 500 grams. Envelopes need not be fabricated from one continuous width of sheet material, but the number of widths must be held to a minimum. Envelopes fabricated from more than one width of material must have all seams, except side seams, parallel to the open end.

It is, of course, imperative that the finished bag be free of holes and further that it be constructed to minimize the danger of ruptures as a result of vibration, abrasion or other causes. Experience shows that vibration is the cause of most

failures after packaging and the plan of swinging the motor in the bag is, therefore, recommended. Gaskets are used on the bags where the mounting bolts penetrate between the motor and the mounting plate and these are tightened solidly so that no vibration can occur at this point.

According to one of the large fabricators, one of the principal problems in bag-making is to avoid flexing the foil material any more than is absolutely necessary, as such flexing is apt to increase the permeability. This fabricator advocates the two-piece construction, which permits keeping the material flat on production equipment.

The two-piece construction uses a plan of a base section which is applied through the mounting ring using a square flange protruding to the edge of the box. The motor is then lowered into position and anchored and all adjustments are padded. The application of silica gel can be made before the top section of the bag is placed over the motor. The top section is sealed to the lower section by a coinciding flange.

Otherwise the bag can be made in a flat construction such as was previously used with Pliofilm. Such a bag, however, should not be rolled down during application as previously; the fabricator recommends sealing the bag to about 12 in. above the gasket line and then simply folding the sides so that they will be out of the way when the motor is lowered into place. After the motor has been secured, closure is accomplished by sealing the sides vertically and across the top.

With reasonable attention to pressure, time and temperature, the vinyl film is found to heat-seal readily. Stenciled instructions on the bags include information as to the correct sealing temperature, time and pressure.

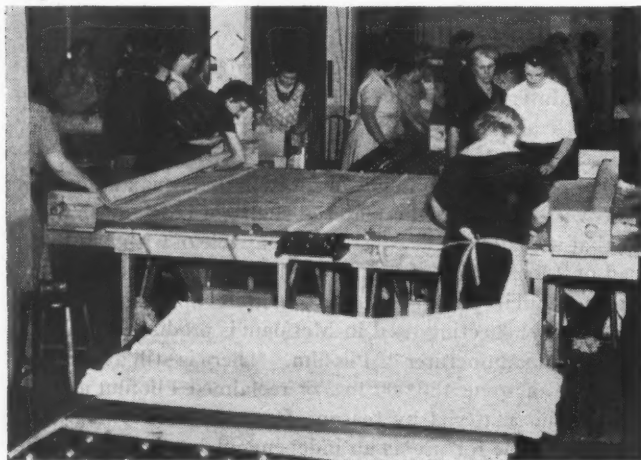
For shipment to packaging plants, the envelopes are carefully folded and placed individually in trays, which in turn are packed in rigid outside containers. This obviates any pressure that might cause hard creases.

For some time to come, it is expected that all available vinyl-foil material will be taken for aircraft engine bags, but as production increases it is planned to extend it to other aircraft parts and sub-assemblies as well as Signal Corps, Medical Corps, Naval and Ordnance equipment for which the utmost impermeability is desirable. It is expected also that the material will have considerable use for protection of both military and industrial equipment which must be laid away or stored during the coming period of changeover and demobilization.

Despite the critical rubber (*Continued on page 164*)

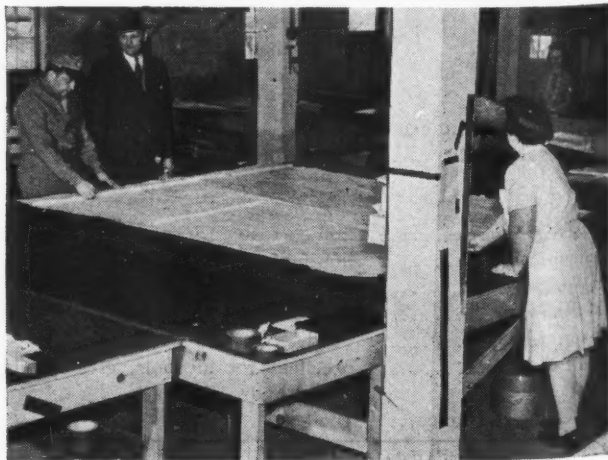
13—Actual fabrication of the bags showing the installation of gaskets. These bags are wound onto wooden reels for shipment. 14—After completion, the bags are shown here undergoing a careful final inspection.

13



14

PHOTOS 13 AND 14 COURTESY AIR TECHNICAL SERVICE COMMAND





1—Container equipped with harness and parachute attached to plane with static line hooked up ready for release.

2—Standard containers used for parachute drop tests. With proper interior packing, contents may be delivered safely.



2

For air cargo... just good packaging sense

If the industrial areas of the country are to enjoy the advantages of packaged air-borne fresh fruits and vegetables, there must be reciprocal plane loads of manufactured goods for the return trips to the agricultural areas.

A postwar system of airlines that will serve practically every city of 10,000 or more was predicted at the Second Annual Air Cargo Packaging luncheon of the Aviation Section of the New York Board of Trade recently.

That this kind of air cargo service may not be too far in the future was further indicated by the recent announcement of a 90-day test on the air transport of all types of fresh fruits and vegetables from the West Coast to the East, initiated by the first flight in domestic transport of a Consolidated Vultee 104, four-motor army cargo plane.

This plane, which carries a pay load of 18,500 lbs., flew a load of lettuce, carrots, strawberries, plums, and peaches from Salinas, Calif., to Cleveland. Special wirebound crates, designed to save weight and space, carried the produce. During the next three months, the plane will make three round-trip flights weekly from California to Cleveland, Chicago, Detroit, New York, Boston and Philadelphia carrying fresh fruits and vegetables. At least 72,000 lbs. a week will be shipped with the aid of supplementary regular shipments carried in Douglas DC-3s, it is said.

Lettuce, carrots, strawberries, plums, peaches and cantaloupes, during the test period, were wrapped in small consumer packages of cellophane or window boxes before they were

packed in their specially designed wirebound shipping boxes.

However, a great deal of the success of air cargo lines will depend, it is believed, on the efficiency of regular drop and pick-up shipments so that no community will be discriminated against in the matter of swift air shipments.

Important aims of the air cargo meeting thus were to acquaint New York manufacturers with the possibilities of snipping manufactured goods by air and to present latest progress in the development of containers and packaging methods for civilian air shipments.

Most interesting packaging developments were reported by a large New York warehouse company which recently conducted a series of extensive parachute drop tests in cooperation with a parachute company to prove that for many air shipping purposes, standard containers used for surface transportation combined with proper interior packaging and good packaging sense will do the trick.

The warehouse company, which has a division for air cargo packing and distribution, has for some time been turning its long years of experience in specialized packing to the development of "scientifically correct air cargo packaging to insure lightness, strength and weather resistance."

The company's interest, of course, is to combine warehouse facilities for the manufacturer with a spot service where his merchandise may be packed and shipped by air as requested on a custom basis.

Naturally, in anticipation of a sizable volume of such busi-



3



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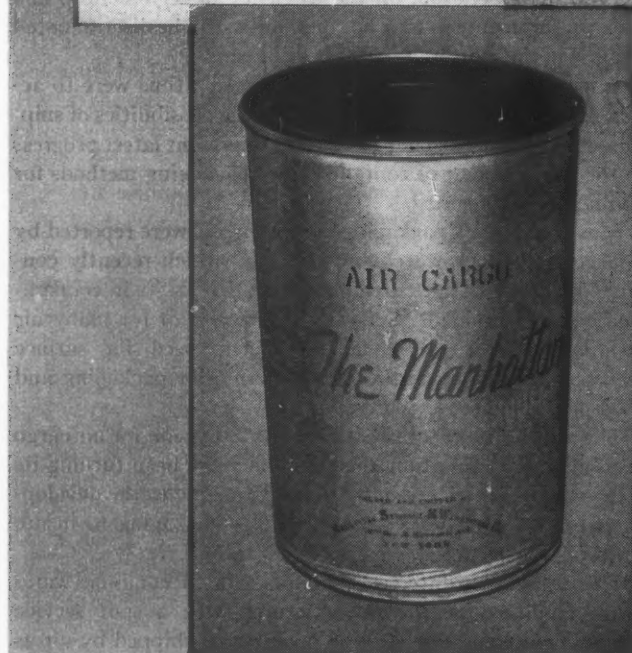
3—Bottles of medicine after being dropped 250 ft. by parachute. These bottles illustrate the fragile type of items used in the tests. All were delivered without breakage. 4—Careful type of interior packing required for fragile items no matter for what mode of transportation. Clock is in box within a box, cushioned in shredded paper, then further protected by cotton wadding. Art objects are similarly packaged.



5

ness, the company has made a study of the products which can be shipped most advantageously by air. These include such items as motion picture films, store merchandise, optical equipment and cameras, cut flowers, art objects, paintings, machinery, hardware, jewelry, electrotypes, liquor, drugs and furs. Although certain limitations are imposed by unusual weight or bulk, in some cases it is possible to divide oversize shipments into a number of smaller packages to meet size and weight specifications which vary according to the air line being used.

To give an idea of comparative costs of air shipment with other types of transportation, a table has been prepared illustrating the air shipping costs of various products, based on percentage of valuation over certain air distances as follows:



6

5—Fibre drum with metal ends packed with delicate china. 6—Same drum after 52-ft. free drop on concrete floor in warehouse. Contents intact. Only slight damage to bottom of drum. 7—Same drum repacked with same china after 250-ft. drop by parachute. Contents still in perfect condition and drum still in excellent shape.



7

New York to	Product	Weight Lbs.	Value	Shipping Cost, % of value	Flying Time
Nome, Alaska	Drugs and medicines	25	\$1,200	4	31 hrs. 45 min.
Juneau, Alaska	Drugs and medicines	25	\$1,200	3	24 hrs.
San Francisco	Lingerie, nightwear	25	\$1,172	1.8	17 hrs. 15 min.
Dallas, Texas	Surgical in- struments	25	\$1,200	1	9 hrs. 30 min.
Mexico City	Optical lenses	25	\$1,000	2	17 hrs. 30 min.
Des Moines, Ia.	10 woolen suits	25	\$ 420	2.2	7 hrs.
Santiago, Chile	Radio parts	25	\$1,500	3	30 hrs. 45 min.
Havana, Cuba	Women's dresses	25	\$2,000	1.14	19 hrs. 15 min.
Miami, Fla.	Fur scarves	25	\$6,500	0.26	8 hrs. 45 min.
Rio de Janeiro	Watches— men's women's	25	13,300	1.07	75 hrs. 45 min.
Nassau, Ba- hamas	Mink coats	25	\$7,500	0.59	19 hrs. 5 min.

Shipping costs by most means of transportation average about 3% of valuation, it is said. The air shipping costs indicated in the accompanying table thus compare very favorably with similar costs for railway, steamship or truck shipment.

One of the factors in cost for air shipment is keeping overall weight down by providing light containers with sufficient protection to assure arrival of goods in perfect condition.

The military services, of course, have developed packing

8—The same drum was repacked after examination. 9—It was then subjected to a third test. This time a 250-ft. free drop from plane without parachute. About 50% of contents was still in good condition. Drum head was damaged, but the fibre walls were still in fairly good condition even after these three very severe shock tests.



methods for air shipment to a high point, but to get goods to the fighting fronts in the best possible condition, cost to them is no object. The economy of civilian shipments is a different story and if air cargo is to be successful, every consideration must be given to the cost of packing methods.

The New York warehouse concern, because of its experience in packing fragile items, is of the opinion that containers used in ordinary commerce can be used equally efficiently for air shipments, as long as sufficient interior protective packaging is used.

In their recent tests, the company selected a group of veneer boxes, wood boxes, fibre drums, fibre drums with metal ends, plywood boxes—had them filled with delicate objects such as china, glass, bottles of wine, radios, etc., and prepared them for the shocks they might receive if delivered by parachute when spot deliveries might be required off airline routes such as mountain areas where normal communications do not exist.

It was their contention that for many civilian shipments, the costly over-protection sometimes specified by the military services would not be needed, providing sufficient cushioning materials of shredded paper, excelsior or cotton wadding were properly used in the package.

For the tests, the company's packers first prepared a group of packages that were used for 52-ft. free drops down an elevator shaft to a concrete floor in the company's warehouse. These packs included a fibre drum containing 12 bottles of wine, weighing 41 lbs.; a small fibre drum containing 4 delicate stem glasses weighing 14 lbs.; a wooden box, 7/8 in. lumber, containing 7 bottles of wine and 3 china cups; a plywood box containing 12 bottles of medicine weighing 18 lbs.; a plywood box within plywood box containing 12 delicate stem glasses, weighing 58 lbs.; a corrugated carton within a corrugated carton containing 45 phonograph records weighing 61 lbs.; a metal-ended fibre drum containing 37 pieces of delicate chinaware weighing 50 lbs.; a small fibre drum containing 5 delicate stem glasses weighing 11 lbs.; a plywood box within a plywood box containing 5 bottles of medicine.

In all these tests, only one (Continued on page 176)



It's for baby

... design and color tell the story

Baby packages that say infants' wear without baby pictures—that sums up the new package family for I. B. Kleinert Rubber Co.'s infants' items.

These packages which tell their story in a stylized design motif that symbolizes children's blocks may be the beginning of an entirely new packaging design trend in the infants' wear field.

I. B. Kleinert Rubber Co. started in business 74 years ago making earmuffs. They ventured into the dress shield business in their search for an item of manufacture that would fill in during the dull months and give year-round employment. Consistently it has been the company policy at its plant at College Point, L. I., to diversify its products so that continued success is never dependent upon any one line.

Kleinert's made their first rubber baby pants and rubber crib sheets in 1894. Their first individual packaging in the infants' wear line was a packaged crib sheet in a set-up box with printed wrap in 1896.

Their first step in packaging merchandise in family groups

was taken in 1942 when the main portion of their notion line was repackaged.

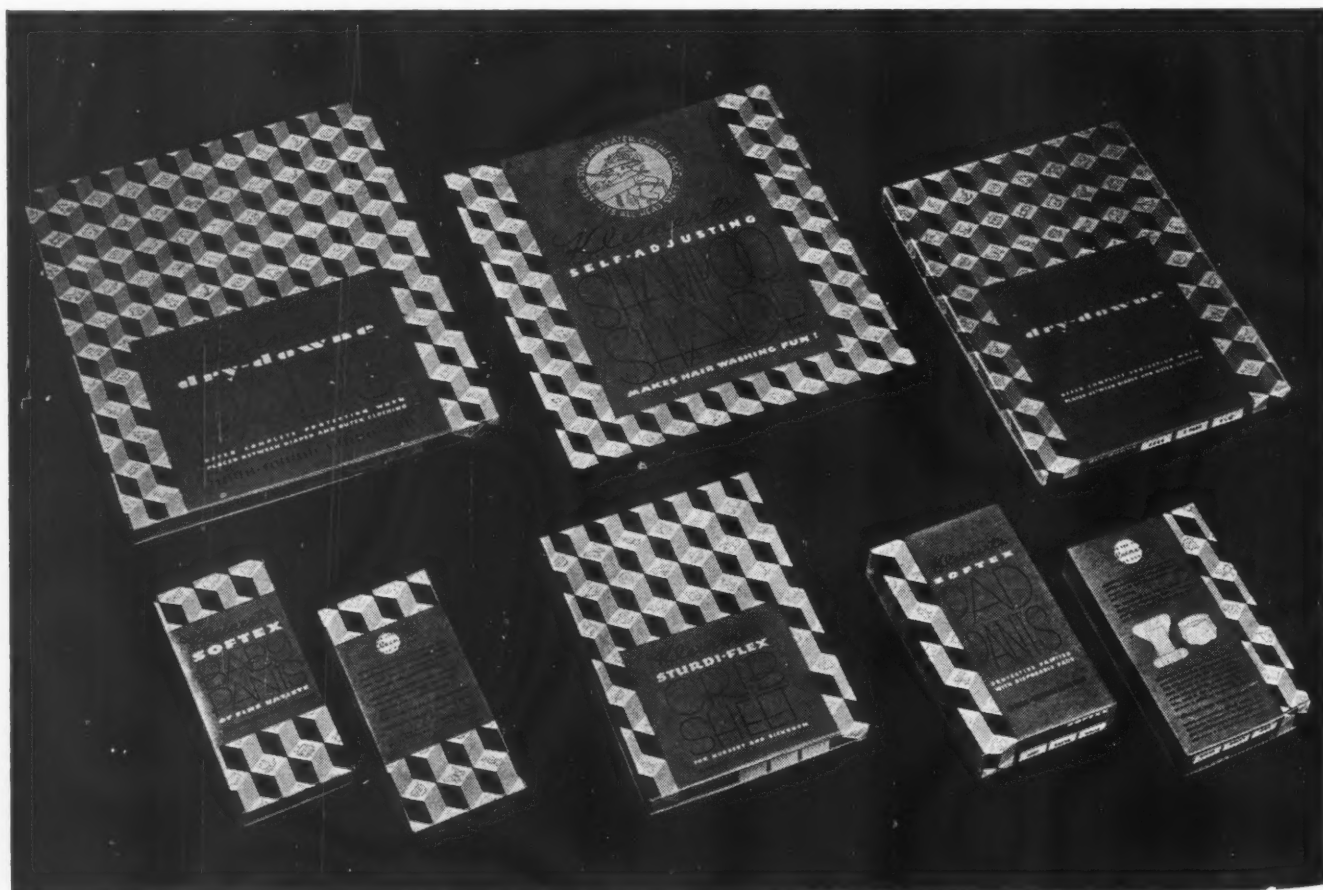
Like many manufacturers, however, the company had been adding one new product after another to its lines. Usually the package for each product was planned with only that one item in mind. After a large line had been built up, however, there was a realization that these packages, each a good package on its own, had no relationship to the others in the group—and no over-all package theme that identified all these items as the products of one manufacturer.

Recognizing this condition in its infants' wear line, Kleinert's about a year ago started plans for the complete repackaging of all their infants' products which eventually will include several dozen items, packaged in various sizes and quantities.

First of all then was the need of an over-all package theme that would give dealer, sales person and customer quick identification of the company, type of product as well as necessary informative data about each item.

Secondly, the planning had to encompass a number of

Kleinert's new infants' packages may start a new trend in baby lines. Identifying design theme is an over-all pattern that symbolizes children's picture blocks, with tiny line drawings of toys on top of each block. Pink label panel carries all essential copy with Kleinert logotype and product name throughout.



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The tip-on above is part of a package insert used with the new packages. It illustrates in miniature the actual package design and color scheme. Three colors are used—two shades of pink and one of blue. The pink panel is spot varnished for a richer effect—helps keep packages clean.

package forms including folding cartons, set-up boxes, wraps, envelopes, bags, cards and labels. Also the design had to be flexible for adaptation to all these forms.

Before any actual packages were planned, the designers made a complete study of the company's products, assembly, storing and shipping facilities. This phase of the work, however, was so well organized that practically no changes were required in the types of containers for the new packages. A survey was also made of retail outlets where the products are sold to ascertain package problems from the standpoint of merchandising, display and stock keeping. The attention value of the package here was especially important, it was found, particularly in department stores, where most of the infants' items are sold. As many as 600 items are stocked by a large infants' section. The family packaging idea is essential, because it is recognized that a customer who buys the merchandise of one manufacturer will show preference for this same packaging and brand in other items. If she is satisfied with one product in a line, she is very likely to match her new buy with past performance—and a package is an aid in helping her find a manufacturer in whose other products she has confidence.

Essentials considered for the new design, were listed as follows:

1. A strong design theme that would be distinctively identified with Kleinert's infants' wear.
2. Eye appeal to attract new and repeat customers.
3. Pleasing decorative elements that would be an incentive for the retailer to use the packages in displays.
4. Flexibility for adaptation to varied package forms.
5. Sufficient space for important consumer information.
6. Provision for quick identity of various items on the shelf by the sales people.

7. Basic design that would also serve for gift purposes.

While this merchandise is primarily an every-day commodity, it is also purchased widely for gifts.

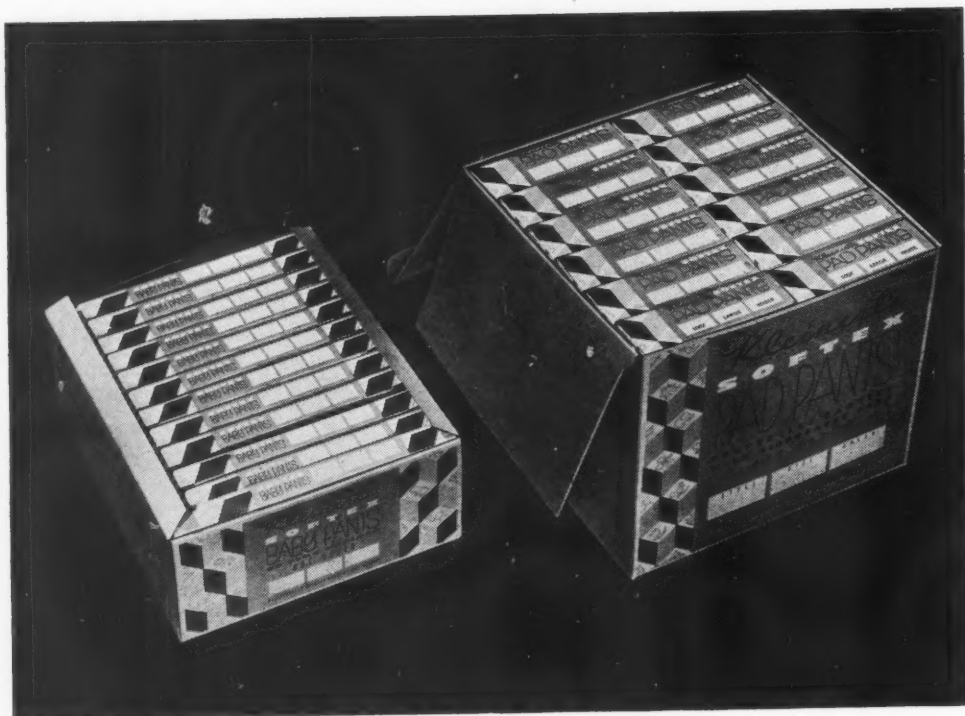
With all these points under consideration, several basic design approaches were worked out. The one finally selected as the most dominant theme is an all-over pattern that symbolizes children's picture blocks, with tiny line drawings of toys on the top of each. The three-color pattern in two shades of pink and one shade of blue is planned so that it may be recognized from all positions. There are no pictures of babies on it, yet the block symbols immediately identify it as an infant's line.

The second design element is a solid pink band, label or panel (depending on the item) which contains all the important copy. The various elements appearing in this pink area are as follows:

1. Kleinert logotype, which has the same character throughout, but is adaptable in straight or condensed version to cover a wide range of uses.
2. Brand logotypes, each of which is done in an individual style of lettering for differentiation but all with family relationship.
3. Stylized hand lettering for item identifications to acquaint the shopper quickly with the article within the package.

The pink area on each of the packages is spot varnished, which not only enriches the effect, but keeps the packages cleaner in handling and helps to keep the pink from fading. The white lettering and other white spaces on the pink area are left unvarnished. This keeps the white from discoloring.

Fronts and backs of the old folding cartons were alike. The backs of the new folding boxes and envelopes are used



Shipping containers are also tied into the family line, having basic design printed on face. A saving is achieved by using only two colors instead of three. Instead of two pinks, an 85% benday of deep pink, gives effect of three colors when combined with blue of the blocks.

for informative copy directed at consumer and sales people. Included is a brief description of the article, enabling the sales person to discuss the merchandise intelligently—also directions for use and care of the product. It is the desire of Kleinert also to present in this space information about textiles and finishes as comprehensively yet as simply as possible.

In the case of all set-up boxes, when the type of box prevents having complete consumer and sales information on the package itself, an insert folder is included inside the package. This folder is designed with a cover which illustrates in miniature the decorative family design and color treatment of the package. A portion of this insert is used on this page as a tip-on to give the reader an exact idea of the color scheme of the package design.

Backs of the packages are sometimes used to call attention to other products as are the tabs on the folding cartons. For example, on some of these tabs are two lines of copy which read, "Have you tried Kleinert's guaranteed dress shields?" Wherever possible, side seam envelopes are used so that the back provides maximum space for whatever informative copy matter is necessary.

End panels are uniform and planned for immediate legibility of style, color and size of each product contained in each package. The children's block motif is carried over on the ends of all the boxes to identify the line more quickly on dealer shelves. Sides are often used for a line of promotional copy.

Shipping containers and bulk cartons are also tied into the family line. The former have the basic design printed on the face. However, a saving was achieved by using only two colors instead of three. Instead of two pinks, an 85% benday screen was used of the deep pink, which gives almost the same effect as the three-color job. A variety of sizes and styles of labels for bulk cartons has been standardized to three on which the basic design is printed in only one color. This achieves good family identification at comparatively low cost.

Type matter on the packages has been set in sans serif

for legibility, particularly in small areas, and for clarity in printing where copy is overprinted on the pink color. Color formulas have been worked out for the inks used and each printer working on the packages is supplied with correct ink specifications. Colors and inks were selected after extensive fadometer tests to determine the fastness of the colors. All cartons are printed by letter press. Box wraps are lithographed. A tissue inner wrap will also be used, printed with the basic design.

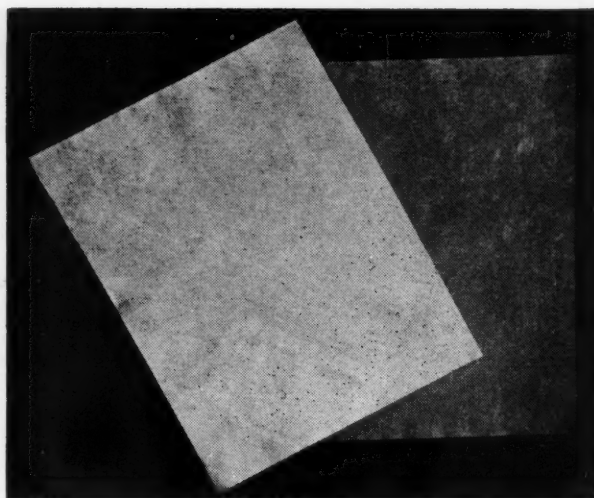
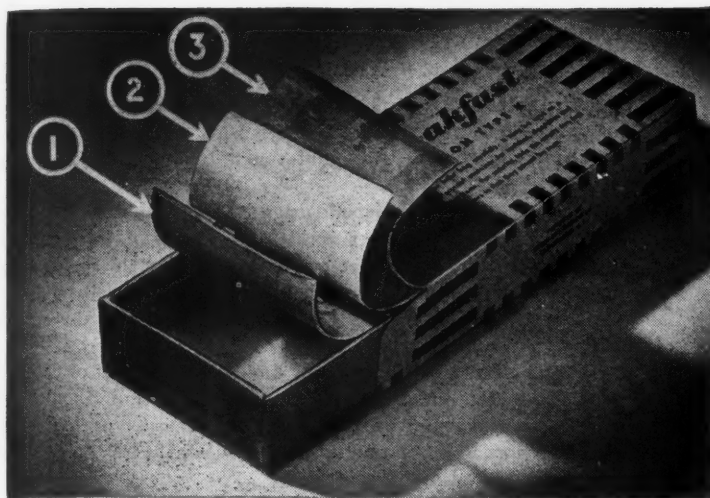
Another interesting consideration is the provision made in the design for the time when cellophane and transparent materials are again available. The over-all pattern with its open white spaces on the sides of the block pattern will be equally effective for printing on cellophane and will allow the merchandise to be seen through the unprinted portions. The pink panels also might be printed in reverse, allowing what is now the pink background to be transparent.

Two of the Kleinert infants' items are already on the market in the new packages, while packages and wraps for several others are in production. Other items will be put in the newly designed packages as soon as production schedules permit.

Wherever the new packages have arrived, they have been most enthusiastically received by sales forces, who like the ready identity and the efficient way that informative data about the product has been included on the package. Stock keeping is easier and the information given on the package or with the package insert is a definite sales aid.

The children's block motif of the design also offers interesting opportunity for both window and interior store displays. Giant blocks simulating those that appear in the design of the package might be used very effectively to dramatize this new package line for infant's wear.

CREDITS: Designers, Koodin-Lapow Associates, New York. Cartons, Trenton Folding Box Co., Trenton, N. J. Set-up boxes, F. A. Schurman Box Co., Brooklyn, N. Y. Labels, A. J. Lipp Co., New York and Tompkins Press, New York, N. Y.; Envelopes, Thomas M. Royal, Philadelphia, Pa. and P. L. Andrews Corp., Brooklyn, N. Y. Inks, International Printing Ink Co., New York.



1—Protective components of new K Ration carton. Regular waxed paperboard inner carton (1) is wrapped and heat sealed in new wrap (2) made up of sulphite tissue, aluminum foil and kraft, laminated with wax, then overwrapped (3) with waxed 30-lb. kraft. This method eliminates wax dipping. Alternate method uses a wax dip in place of the kraft overwrap. 2—Camera study of new laminated wrapper, showing at left tissue-foil side and at right kraft side of sheet. Wax is used as both the adhesive and heat-sealing agent.

Foil barrier for the Ration K carton

Using aluminum foil as the primary water-vapor barrier, a new three-ply lamination has been developed for the Quartermaster Corps. The finished sheet contains two plies of dissimilar paper in addition to the foil and utilizes wax as both the adhesive and the heat-sealing agent.

This new water-vapor barrier is being used as a wrap for the inner carton containing the Ration K components. Laboratory tests indicate that it increases substantially the level of protection against high humidities and that it likewise performs well under other climatic conditions.

After storage tests extending over a period of several months, the Quartermaster Corps, procuring agency for all subsistence for the Army, has written the foil lamination into its specifications for the K wrapper.

The new wrapper, now supplementing the familiar wax-dip coating, is utilized in two ways. In both cases the laminated wrapper is applied directly over the filled and sealed carton with a variation appearing in the secondary barrier.

Current QMC specifications for the material are based on the laboratory test results and describe the new foil-paper-wax lamination as follows:

"A sheet of high-density, steam-finished kraft paper having a basis weight of not less than 25 lbs. per ream (which shall be on the exterior surface), shall be laminated to one side of a sheet of fully annealed pure aluminum foil, substantially free from pinholes, having an average thickness of 0.0005 in., with not less than 15 lbs. per ream of a permanently plastic adhesive. To the opposite side of the foil a sheet of dry-waxed sulphite having a finished weight of 13 lbs. per ream shall be laminated with not less than 15 lbs. per ream of a permanently plastic adhesive. This three-ply combination sheet shall in turn be overwaxed with not less than 18 lbs. per ream of a fully refined heat-sealing paraffin having a melting point of not less than 132 deg. F. (ASTM D 87-42). During the laminating process the foil shall be handled carefully to

prevent work hardening and formation of pinholes." (In the above ream means 24 by 36—500 in all cases.)

At this point the difference in the two methods of application appears. Under one procedure, the lamination with foil is covered with an overwrap of 30-lb. kraft paper waxed to 60 lbs. per ream with a 50/50 mixture of paraffin and microcrystalline wax. In the other procedure, the foil-wrapped carton, instead of being wrapped a second time in waxed-kraft paper, is dipped in one of the approved waxes such as has been in use on the K Ration carton for some time.

The development of this interesting new lamination was undertaken cooperatively by the Marathon Corp. and the Aluminum Co. of America when the Quartermaster Corps expressed an interest in reducing the water-vapor transmission rate of the barrier used to protect Ration K. The first assembly plant to work with the laminated foil wraps was the Beechnut Co., Canajoharie, N. Y., but at the present time four Ration K packers are using the material.

The Package Machinery Co. has adapted its standard FA wrapping machine to handle the new material and in the last 60 days has shipped 15 of the machines—six to the American Chicle Co., Long Island City, N. Y.; six to W. K. Kellogg Co., Battle Creek, Mich.; three to Cracker Jack Co., Chicago.

Laboratory data indicate that the laminated wrap is approximately four times more effective as a water-vapor barrier than the materials previously used. The tests were conducted in "tropical" storage rooms where the temperature was kept at 100 deg. F. and the relative humidity at 90%.

In addition to this new type of outer wrap, aluminum foil has been used for some time for packaging some of the K beverage components, such as the coffee of the breakfast unit; the coffee, orange or grape drink of the dinner unit and the coffee or bouillon of the supper unit. There has been some discussion of coloring the foil wrap (envelope) of each of these beverages with a distinctive (Continued on page 172)



Boxed razors

This permanent box for Gillette safety razors and blades is molded of cellulose acetate butyrate and is finished with a glossy surface so that it is able to withstand rough treatment and careless handling.

The box has been designed with a specially built rolling hinge and a snap fit to prevent accidental spilling of the contents. Sparing the user the unexpected sudden action of the spring hinge usually found on such boxes, the lid swings back easily over the base on two small projections molded at either end of the bottom section of the hinge.

The lid closes tightly over a lug molded in the front of the base of the box. It is opened simply by inserting the thumb nail under the closure and prying up. However, the closure is tight enough so that a normal jar or a bump will not make the box spring open of its own accord.

Inside, the box is divided into compact compartments. The razor head fits neatly into one while a package of blades just fits into the other. The razor handle fits into the trough at the back of the box formed by the rolling hinge while the top is molded with dividers to keep the contents from rattling.

The whole box is small enough to be carried easily in a pocket or kit. Modern in appearance, it has a surface finish which is not damaged by contact with water and is quite resistant to scratches or mars, making it an ideal container for the service man or traveling man.

CREDITS: Cellulose acetate butyrate, Tennessee Eastman Corp., Kingsport, Tenn. Molder, Foster Grant Co., Inc., Leominster, Mass.

DESIGN HISTORIES



Flasks that save lives

The Army Forces is now packing sustenance and personal life-saving aids in a compact canvas kit which is fastened to the belt instead of in a vest, as in the past.

Tightly fitted into the canvas kit are two plastic flasks of ethylcellulose and a kraft envelop containing an emergency signaling mirror. One of the flasks is packed with foods and the other with medicinal products. In all, the kit carries 35 items. The flasks are so molded that they have two openings. The whole top may be removed by forcing down a metal lock similar to the closures on old-fashioned beverage bottles. In addition, the top is provided with a watertight screw cap closure making the flask suitable for carrying drinking water.

All the vials used for tablets are semi-rigid cellulose acetate with metal screw caps except the vial for halazone tablets which is glass.

Of especial interest, in the subsistence flask there is the transparent match case made with a compass set into its top. In this same flask, two packets of bouillon powder are taped together with cellulose tape to form a folder inside of which are packed several personal aids such as pins, needles, razor blades and fishing necessities for both salt and fresh water.

CREDITS: Canvas kit and custom packaging done by Bogardus Bros., New Rochelle, N. Y. Flasks, Standard Molding Corp., Dayton, Ohio. Vials for tablets, Celluplastic Corp., Newark N. J., and Lusteroid Container Co., Inc., So. Orange, N. J. Glass vial for halazone, Kimble Glass Co., Vineland, N. J.

Drill lubricants in fibre

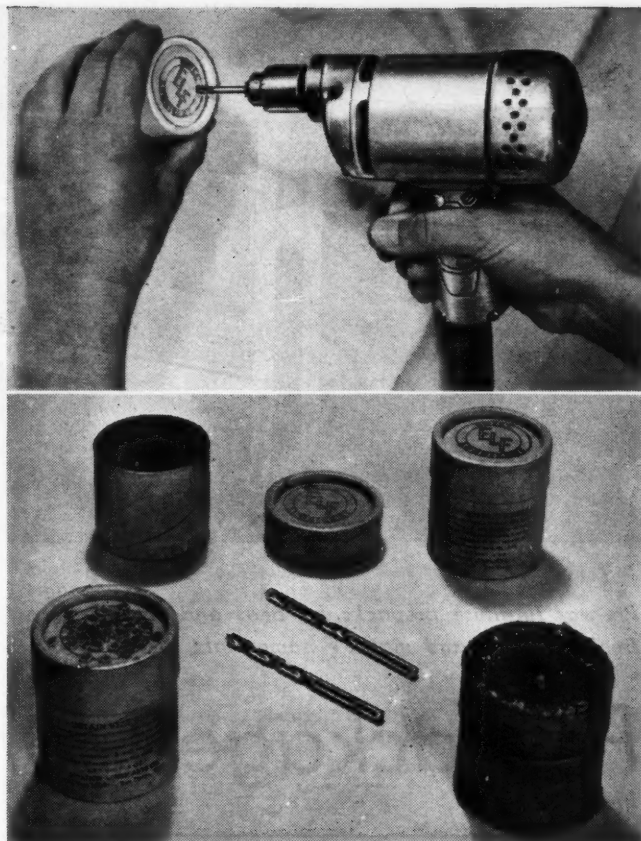
A 1/4-pt. fibre can with a push-up bottom of the type generally used for ice cream, makes this unusual package for the "Elf" drill lubricants manufactured by the Aviation Lubricants Co., San Diego, Calif.

A large aircraft manufacturer, in his search for a method to cut down drill breakage, was partially responsible for this entirely new conception in the packaging of drill lubrications. The top is never removed from the package but is just worn away as the lubricant is used. When the top is completely gone the container is empty. The drill is inserted through a different spot in the cap each time it is lubricated for two important reasons. In the first place, on the way in, the drill is cleaned of any metal chips and the lubricant, therefore, is kept free of foreign matter for future use. On the way out, any excess lubricant is wiped off the drill. The movable bottom is pushed up periodically to keep the lubricant at the top of the container.

Operators have reported that they particularly like the new package because the size is such that it can be gripped easily while lubricating the drill. Also, the package is clean and small so that the operator does not mind keeping it in his tool box where it is always handy when needed and is not apt to be disposed of before the lubricant is completely used.

With this handy package, manufacturers report that drill breakage has been cut drastically and high-speed drills stay sharp much longer than formerly.

CREDIT: Fibre can, Fibreboard Products Inc., San Francisco, Calif.



DESIGN HISTORIES

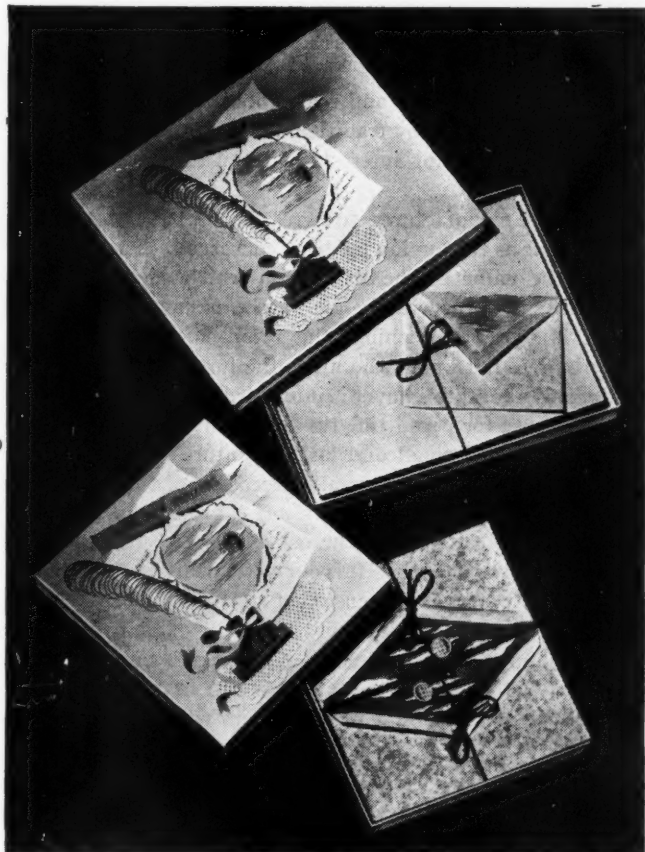
"New Horizons" stationary

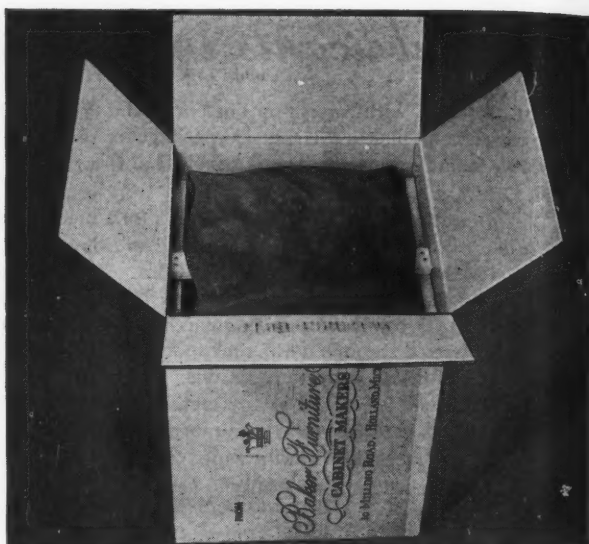
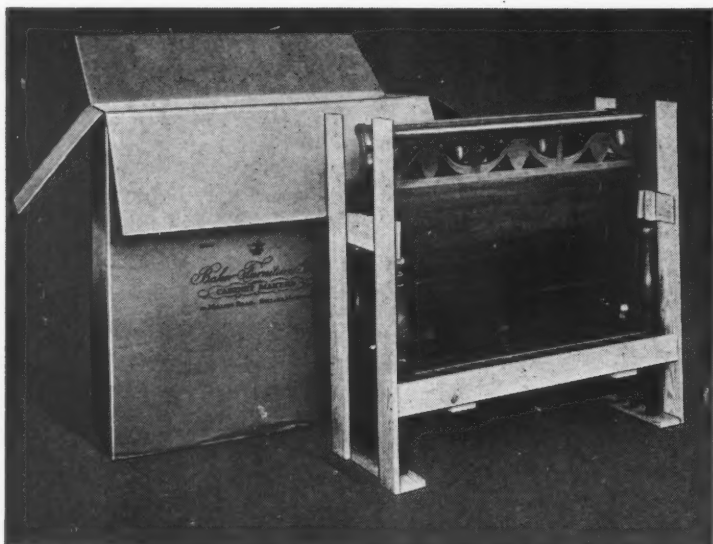
All precepts of stationary designing were ignored by the Eaton Paper Corp., Pittsfield, Mass., in this new stationary design which started with a "story." "New Horizons," the name of this fine letter paper, grew out of the thought that life would begin again for so many people with the end of the war. Letters being exchanged with persons in the service and with other friends are full of thoughts of tomorrow, of new horizons. This was the basic idea which resulted in the new design.

The paper is extremely lightweight because tomorrow's mail will fly. The cloud pattern on the paper and envelopes carries the "bright sky" message of peace. Sunrise tints, four of them, symbolize the dawning of a new day.

The box design for the new paper was a more difficult problem. The cover had to tell the complete story and, after many discarded ideas, the one illustrated was evolved. Printed in five colors by offset, the design is meant to be mood-evoking. The ink-well, the pen, the written letter make explicit what the box contains. The break-through, showing the new horizon, is to give the promise of both the pleasure involved in letter-writing and the design of the letter paper. The distant sphere in the background represents the peaceful world of the future.

The tops of all the boxes in all sizes are printed with the same design. In each case, however, the box bodies are colored the same tint as the paper inside to act as a guide for the sales clerk in selecting from behind-the-counter stock. The whole "New Horizon" line consists of eight numbers—making a strong display and promotional group.





PHOTOS, THE HINDE & DAUCH PAPER CO.

Pre-war furniture prepacks for beds and small tables successfully introduced by Baker Furniture, Inc., take "factory fresh" product and maker's name right to customer's home. Such packing eliminates all repacking by the retailer.

Prepackaged furniture

The furniture industry is taking broad steps towards post-war packaging and manufacturers who make the most of what new materials and methods offer may find that this will do as much as advertising to bring this basic branch of the home furnishing industry its fair share of future consumer dollars.

The packaging lag of the furniture industry behind such modern-minded newcomers as radios, refrigerators and stoves, for example, has not been entirely due to apathy. There are innumerable difficulties and real problems to be solved and these are aggravated by traditional taboos and sometimes by apparently conflicting interests of retail dealers and manufacturers.

Furniture manufacturers to a great extent have been anonymous so far as the buying public is concerned. The customer knows the name of the store from which she bought her furniture; she very rarely knows the name of the maker. What is more astonishing, the retail floor salesman frequently does not know who made the furniture he is selling. Often only the store's buyer is interested in sources of supply.

The excuse for permitting this anonymity is that there are more than 3,000 small and large furniture factories in the United States and a very small percentage of these are large enough to have a national advertising appropriation.

Retail merchants say to the manufacturer: "Our name is better known than yours—it is our advertising and reputation for reliability that brings customers into the store. We buy from many sources and it is not to our advantage to advertise factory names. We take most of the rap if anything goes wrong."

Yet wherever a manufacturer has done national advertising in even a small way many merchants have been glad to capitalize on the customer acceptance thus created. Others, the larger metropolitan stores, are not so cooperative and manufacturers have been weak enough to consent to let the

store name replace their own despite manufacturer promotion.

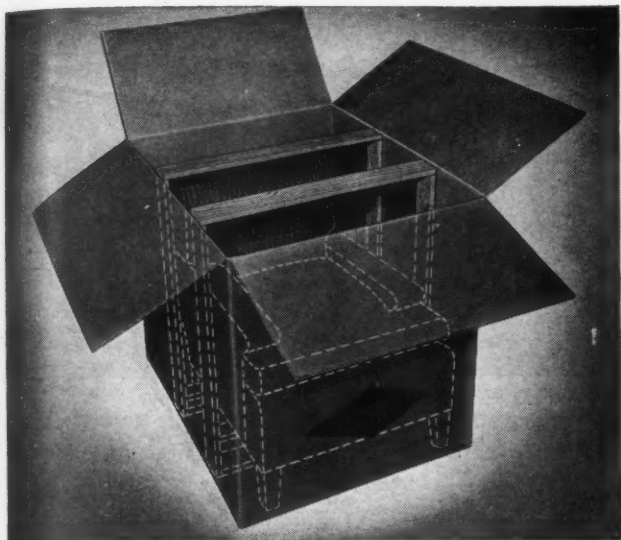
Only 110 of the 3,000 furniture manufacturers are listed as national advertisers, according to a statement made by the director of marketing for the Hearst Magazines in a speech before the recent meeting of the Grand Rapids Furniture Forum. In 1944, through November, national advertising of furniture amounted to only \$315,000, representing the total expenditures of 44 factories.

Because furniture has been sold under the name of the retail dealer instead of under the name of the manufacturer, archaic methods of packing for shipment have continued to be used by most makers. There is little incentive to promote package identification of a product which is removed from its crate the moment it reaches a retail outlet.

If one could overcome the stubborn resistance to doing anything different which seems to animate most furniture manufacturers it is said that all but the most heavy and irregular shaped pieces of furniture could be packaged.

This would include all upholstered chairs and sofas (although it might be necessary to screw down legs to the base of the container); all small tables, particularly modern designed end and lamp tables; coffee and cocktail tables; beds with sides, head and footboards boxed separately; chests with mirrors sent separately, as is present practice. Modern design sideboards could be packaged, but the ornate period pieces would present difficulties, although credenza sideboards are as box-like as modern chests. All occasional tables except tier tables and other ornate pieces could be prepackaged, as could all upholstered and dining chairs. Even dining tables, which are usually extension type or assembled from smaller tables, could also be prepackaged. Smaller desks of modern design offer another packaging prospect.

Furniture was crated in wood 100 years ago, when wood was cheap and to a large extent it has continued to be so packaged to the present. At the moment wood for crates is almost as



Dotted lines show how chair fits into corrugated carton with interior wood supports used for Tomlinson furniture.

difficult to find as corrugated or fiberboard and some manufacturers have made improvements in packaging methods from necessity rather than from the standpoint of intelligent merchandising.

Wood crates are bulky and encourage careless handling both in the factory and in the store shipping room.

For years it has been a fixed rule that all furniture after being uncrated at the store must be "refinished," cleaned of dust and dirt, gone over for mars and given a final polishing before being displayed for sale—this despite the fact that all but the very cheapest furniture is completely finished before it leaves the factory and that many makers of high grade furniture regard their special finishes as one of their most important selling points.

Almost any retail merchant will admit that much time and money could be saved if the "refinishing" department could be eliminated and it should not take much time to convince him that furniture properly packaged at the factory will not need refinishing and can be delivered to the customer in its original package without fear of complaints.

Package makers must produce and furniture factories must introduce to their customers cartons which are guaranteed to

bring furniture to the store in exactly the condition in which it left the factory finishing room—cartons capable of long time warehousing without deterioration, packaging they can be proud to identify with their trade name.

Is such packaging possible?

Carton manufacturers who began making it before the war and manufacturers who have used such cartons say, "Yes."

Here are the requirements:

1. The container must keep the furniture absolutely free from dust and must hold it so securely that it cannot be marred in transit.
2. It must be adaptable to long-time warehouse storage.
3. It must be so easily opened that it will present no problem to the housewife to whom it is delivered.

In addition, whether the manufacturer is spending money on national advertising or not, it should be plainly marked with his name and trademark.

The first requirement is fairly simple. Cartons have been made of fibreboard and of plywood panels which will keep the product free from dust. The problem of preserving the finish free from mars has also been successfully met.

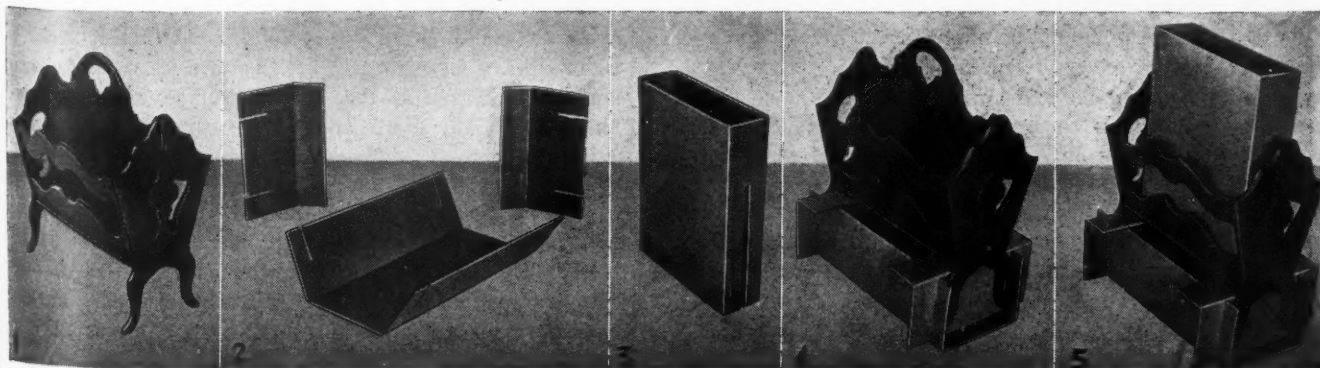
In packing the larger pieces such as chests and sideboards it is sometimes necessary to use interior packing. Interior packing is also sometimes used on smaller odd-shaped pieces, such as tier tables, but this packing is not of the old-fashioned litter-creating variety to which women object. Die-cut corrugated pads are used. Even this would be unnecessary, according to some packaging experts, if cartons were lined at critical places with wax-surfaced fibreboard or with felt covered slats. Some makers have already made use of specially shaped cartons to fit individual pieces, with the base fitted with cleated channels to keep the piece from slipping.

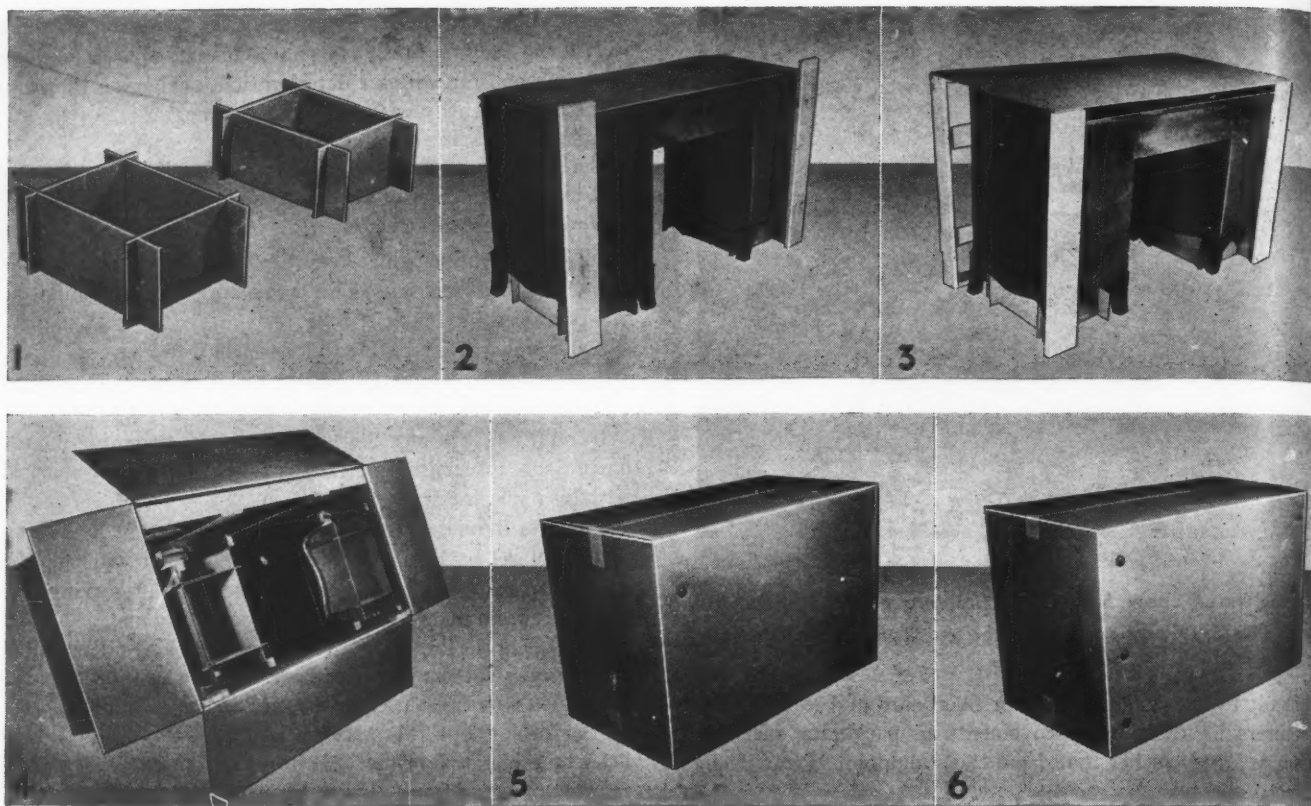
Packaging for long-time warehousing is also fairly simple. Most retail furniture stores or furniture departments in department stores have warehouses. Only one or two pieces of each type are shown as samples on the retail floor. Sales are made from the floor samples and deliveries are made from the warehoused stock. Some stores have modern warehouses in which furniture is placed on racks, but many stores still have old-fashioned warehouses where furniture is stacked one piece above another.

For this reason packing cartons must be strong enough to withstand the continued strain of heavy weights.

Most furniture cartons of fibreboard are made on wood bases and reinforced with light wood frames. One manufacturer

Interior packing for magazine rack recommended by Freight Container Bureau. (1) Article to be packed. (2) Scored and slotted pieces of corrugated, when interlocked, form bottom support, lift rack off legs and hold it away from container walls. (3) Taped and slotted tube placed over handle and center partition protects handle, holds rack against bottom support. Sheet of waxed paper protects handle from marring under tube. (4) Assembled, interlocked bottom support with rack in place. (5) Rack completely packed except for shipping container, with tube and slotted pieces in place.





Method of packing a vanity and mirror suggested by Freight Container Bureau. (1) Vanity is supported off legs by two half-slotted interlocking supporting sections under each pedestal. (2) Back of vanity with two vertical wood members fastened to back posts by screws. (3) Fibreboard sheet is placed over top to protect surface. (4) Bottom view of vanity in shipping container showing half-slotted interlocking sections that suspend article off legs. Mirror is fastened in position against face of box. (5) Front of box showing screws driven into the horizontal and end members of frame containing mirror. (6) Back of box illustrating how screws are used to fasten the vanity to back face of box.

has used reinforcing slats stitched with wire on the outside of the carton. Sheet plywood cartons now being used to some extent possess the necessary strength for warehouse storage, but are usually more expensive than fibreboard.

Retail merchants are as enthusiastic about these new packing methods as manufacturers. Some of the impetus towards more modern packing came from the retail stores. One department store buyer who grew tired of paying freight on sets of upholstered chairs which one Southern manufacturer habitually shipped crated in enough rough pine to build a bungalow, called in packaging engineers to make suggestions which were passed on to the manufacturer. The result was a fibreboard carton in which two chairs could be nested, wrapped in Sisal-kraft paper. The resulting package weighed much less and took up less space in shipment, the furniture arrived in perfect condition, no strong arm men were needed and the chairs could be warehoused without store inspection. Though this type of packaging would not be suitable for delivery to homes it was a vast improvement over the previous wood crate.

It is on the question of delivering furniture to the ultimate purchaser in its original carton that manufacturers and dealers will diverge most sharply.

Obviously it is to the advantage of the manufacturer to have the carton stamped with his name and trademark go into the home of the woman who buys the furniture. If the carton is attractive in appearance, it will add to the impression of high quality which he wants to create.

Retail dealers insist, with some basis for their contention, that a woman wants a piece of furniture brought into the

house or apartment and placed by the truck driver in the exact spot chosen for it. She will probably have a neighbor in to see it on delivery. Dealers concede that smaller pieces such as end tables can be delivered in the original carton, but they say women do not want huge boxes brought into the house. Even with the smaller cartons, they say, careless opening in the home often results in marred finish and returns for repairs or a substitute piece.

The answer to this is a convenient carton that can be opened without tools.

Packaging engineers suggest a simple closure made by fold-over flaps secured with gummed tape that can be easily torn off, or closures of looped wire than can be opened by hand.

The carton can be opened on the truck where pieces are larger and can be left at the house or taken back to the store according to the wish of the purchaser. While apartment dwellers will generally refuse the carton, many women living in houses would welcome the cartons for their reuse value. A tag or label might be attached to the furniture so that even if the box is left on truck the consumer gets the maker's name. This could be an informative label—telling of designs, materials and care. A point could be made of the "factory fresh" idea.

One condition under which the new cartons will always be delivered direct to the home is in case the furniture is delivered direct from factory showrooms, even though purchased from the retail dealer. Most makers of high grade furniture maintain showrooms for the trade in a number of large cities. Retail dealers and decorators who do not have

complete stocks of any one line in their stores frequently bring their customers from a radius of 200 miles to these showrooms where the customer can see a wider selection. When purchases are made in this manner the customer buys from the retail dealer but the furniture is usually delivered direct from either showroom or factory to the customer's home and manufacturers who have adopted modern carton packaging deliver the pieces in their original cartons stamped and often additionally tagged with the maker's name.

At the moment, furniture manufacturers are using any material they can get for crating or packaging furniture. Carton manufacturers who had begun to make packages for furniture are still busy making containers for war material—ammunition, subsistence and repair items—but many of them are making plans for better furniture packaging as soon as their facilities are available for civilian use.

Whether retail stores will ever be willing to deliver large pieces to customers in the original carton is impossible to predict. That they will welcome packaging that will eliminate expensive "refinishing" at the store and will enable them to warehouse deliveries without removing the furniture from the carton in which it arrived is certain. But dealers will have to have proof that the packages really are dust- and mar-proof and that parts included in the package are complete and finish "factory fresh."

For some time after facilities and materials are available for increased production, retail merchants will require more merchandise than can be delivered. While manufacturers are in the favorable position of enjoying a "seller's market" is the time to introduce modern packaging methods that are certain to result in higher standards and increased use of trademarked, identified merchandise.

"Seventeen cosmetics" celebrate birthday in new dress

To create a distinguished line of cosmetics does not necessarily require a whole array of private bottle molds or special containers. An excellent example of how regular stock supplies may be dressed up into a striking line is the new family of Seventeen cosmetics. Seventeen celebrated its seventeenth birthday on July 17 when its new packaging was introduced.

The debut initiated the keying of the line to girls from 17 to 22, an age group that is becoming increasingly important today. In keeping with this specialized age-bracket appeal, the new package design has neither "little girl" quaintness nor adolescent sophistication. It is planned rather for the clean-swept freshness that has been selected for the scent of the preparations.

The background color is a cool, muted blue, banded with a white laurel wreath and combined with a modern script signature in vivid Seventeen

cerise. All containers used are stock merchandise with the exception of the cologne bottle which is a private mold. This horseshoe bottle has been well-known in the Seventeen line for some time, but has been redressed by being fired in the basic blue. A rich effect is also achieved by generous use of silk screen.

The preparations are sold as individual items, but at the suggestion of the Seventeen Cosmetics Jury, composed of high school, college and career girls, the products also have been assembled in sets for luggage gifts and travel kits of fabric and simulated leather.

CREDITS: Designs, Josephine Von Miklos, New Canaan, Conn. Bottles and jars, T. C. Wheaton Co., Millville, N. J. Silk screen labels, Creative Printmakers, New York. Box coverings and labels, The Foxon Co., Providence, R. I. Gift luggage, Maxon Mfg. Co., New York. Quilted boxes, Platt-Lee, Inc., New York.



Meatless foods . . . two decades of health packaging

Food rationing and especially the meat shortage has spotlighted the complete line of "vegemeats" produced by the Loma Linda Food Co. of Arlington, Calif. Since 1906 this company has been manufacturing a line of health-food products. At first these were primarily for use in sanitariums and other institutions requiring vegetarian foods in combating disease. Through the years, as the foods gained in popularity, a real consumer demand was created that developed into national distribution, principally through health-food stores.

As demand grew, more and more attention had to be paid to the packaging. Within the last few years, distribution has been broadened to include grocery stores—many of the "self-service" type. In these latter outlets foods had to sell directly off the shelves with, in most cases, the package itself becoming the only salesman.

It was at this point that George T. Chapman, general manager of Loma Linda felt that glass containers, at least for some of the products in the line, might add to the shelf-appeal of the foods. New users of this type of health food are very often sold their first product by the see-before-buying method.

One item alone, Vegemeat Steaks, a protein food which is a meat substitute and is the leading item packed in glass, has shown such a great increase in sales that the company has been unable to meet production schedules in spite of increased floor space and improved packing facilities including automatic machinery for slicing and packing. Other Loma Linda foods now in glass are Soy Beans, Vegemeat Burger, Savorex, Soy Mince Sandwich Spread.

Foods remaining in tin are: Soy Bean Milk, Nuteena, Proteena and Vegelona. Bright, attractive labels decorate all Loma Linda products. Background color is yellow to stand out on the grocers' shelves while type appears in red or bright blue for easy reading. Full-color appetizing reproductions of the actual product are shown on each label to aid in visual selling.

The leading cereal product made by Loma Linda is Ruskets, a biscuit-like product of 100% flaked whole wheat. This product had to stand up against more competition than any others in the line. The box, therefore, had to be designed to carry a sales message in competition with all the other cereal packages on the grocers' shelves. In fact so carefully has the designing been done that the box not only constitutes a point-of-sale piece bound to attract attention but it also continues its merchandising job on the pantry shelf in the home.

Each of the six surfaces of the box carries the name Ruskets and the signature cut "Loma Linda Foods." The front panel carries a realistic illustration showing the product in use with the vitamin analysis shown in white reversed on a red panel. The back panel is devoted to natural color illustrations, recipes and variations to which the product lends itself. The side panels, in addition to repeating the name in bold lettering, give more detailed information on the product and its food value. All in all this package is an excellent example of informative labeling.

Plus all the attention which has been given to the eye-appeal of the package, the (Continued on page 172)

All labels on Loma Linda vegetarian foods maintain the same basic color scheme—red, yellow and blue—for family identity. Glass is being used now for a number of the products for added eye-appeal in self-service stores.





1—In actual test, side by side, plain salt package sold 25% more than one with band offering free canning lids as special inducement. 2—Overstocked on opaque packages of spaghetti, sales lagged despite price cut. Packed in cellophane with label cut from original package, item was quick sell-out at full price.

Super-market test of buy appeal

by L. A. Johnson*

Each month more and more food retailers are changing over from service store to self-service. As they change, the products that are better packaged—those that have that “take me home” appeal—will step out in front of those whose designs do not seem to catch the eye of Mrs. Consumer.

As we in the self-service field well know, the purpose of a package is not only to preserve and contain the contents, but to sell the merchandise. To better accomplish the latter, the appearance of the package plays a most important part. Whatever push the clerk in a service store gave to a product is now lost; in a self-service store, the package is on its own. It is up to the package designer to do a better job and supply the information about good points of the product which would be given by the clerk in a service store.

In a short time, hundreds of new items are going to be fighting for the favor of the shopping housewife. The smart manufacturer who gets there first with the proper designing, the eye appeal, the message on the package, will have a head start on his competitors.

I think the manufacturer could better accomplish his purpose of interesting Mrs. Consumer by trying out different designs right on the firing line; that is, by displaying packages before her and finding out for himself which design attracts her.

A sales manager cannot always tell after interviewing prospective salesmen which will be the best received by the trade. These interviews do not always determine which man will send back the most orders. The sales manager has

to await the reaction of the buyers to his representatives to determine what type of man is best received. Would not the same formula benefit the manufacturer if he applied it to packaging?

The writer operates self-service markets in central New York State and spends many hours each week on the floor of one particular market. Through the current labor shortage, I have helped stock displays, shelves and tables. This has given me an opportunity to observe the reactions of all types of people to the products we display.

Recently we made some experiments and surveys in our S. Salina St. market in Syracuse. The same results might not have been obtained in other cities, or even in other markets in this same city, but they did happen here—so I am writing about them not as a final, definite proof of what is good and what is bad, but only to stimulate the thinking of our friend, the manufacturer of nationally advertised merchandise. My aim is to help him in the problems that he will soon have to face in competition to the products of private brands; to help him see that better packaging will enable him to obtain a larger share of the market to which his radio, newspaper, direct mail and billboard advertising entitles him.

We do not always know why we do, or do not do, certain things. We do not always realize what attracts us to displays of certain merchandise—why we notice some types of packaging more than we notice others. But the fact is that we do, and so does Mrs. Consumer.

A questionnaire to Mrs. Consumer will not always bring out the true facts. Would the fisherman send out a question-

* President, Johnson's Foods, Inc., Syracuse, N. Y.

naire to his prey, even if it were possible to get an answer? Would he question the fish as to what bait is most attractive or in what season he will bite best? Would the hunter send a questionnaire to a partridge, asking where he can be found and flushed? No, neither the hunter nor the fisherman would do this—but what he does is to study the habits of the game he is seeking. That is what this writer would like to see the manufacturer of nationally advertised merchandise do.

For the last few years we have had a large display of Diamond Crystal salt in the front of our Salina St. market. Last fall the Diamond Crystal Salt Co. came out with a band on their standard package of shaker salt (Fig. 1). This band reads as follows:

SPECIAL OFFER TO
HOME-CANNERS
One Dozen (2³/₈" Diam.)
THRIFT-LIDS
For only 10¢ and 2 Diamond Crystal
Shaker Salt spout seals

It is not my purpose to criticize this promotion. I do not know how successful the campaign was, but I did take these packages to try and satisfy myself as to what effect this band would have on the impulse to pick up this merchandise. I divided our display of Diamond Crystal salt into two equal parts, half with the band on and half with the band off. The second week, I reversed the displays, to counter-balance any effect of position. The result was that in these two weeks,

the salt package with the band attracted 214 buyers while the package without the band—offering no special inducement—sold 267, an advantage of 25%.

I asked many people why they picked up one package in preference to the other. Their answers were vague; they could give no definite reasons. Maybe it was because the band covered the big identifying word "SALT." But the fact remains that there was a difference in the packages and the regular package paid 25% more rent for the same floor space than did the package with the "special offer" band.

Last year we found ourselves overstocked on a 1-lb. package of long cut dry spaghetti (Fig. 2). It was under the Premier brand—a line of merchandise that enjoys a good business in our section—but for some reason this particular package did not sell although the product itself was of the highest quality. It retailed for 14 cents. In order to help move it we reduced it to 12 cents and finally to 10 cents per package. Still it moved slowly. As most retailers know, price is not as important these days as it has been in the past.

One day I had the girls who package our bulk products take this spaghetti out of its original carton and put it in cellophane. With a razor blade, they cut the Premier label off the original package and put it inside the cellophane package. We displayed this package (Fig. 2) in the very same spot in which the original package had been stocked and went back to the original price of 14 cents. In three weeks time we were sold out of this product.

The reaction of customers to this experiment caused me to

3—Setup of display for macaroni test (top shelf), showing the original package in center, plain cellophane on left and cellophane with the label on right. Relative position of three packages was shifted several times during the six-week test, but improvised cellophane-with-label package proved to be best seller.



wonder what would happen if we took a well-known, nationally advertised brand of macaroni and treated it the same way. So, recently we experimented with Mueller's large family size 16-oz. elbow macaroni, a fine product which enjoys a tremendous sale in this territory. We displayed the original opaque package at 13 cents. Then we took the contents out of several packages and put them in cellophane, cutting the labels off the original Mueller's boxes and placing them under the cellophane. Finally, we put some of the Mueller's macaroni in plain, unlabeled cellophane packages. We displayed these three packages side by side (Fig. 3), with these results:

From March 28 to April 21, the plain cellophane sold 101 packages, the original boxes 99, and the cellophane with labels, 133.

We shifted positions on the shelf and from April 21 to April 28 we sold 43 in cellophane with labels, 57 of the original boxes and 27 in plain cellophane.

Again we shifted positions, and from April 30 to May 7 we sold 55 of the original boxes, 48 in plain cellophane and 64 in cellophane with labels.

The net results for the three tests were as follows:

Plain cellophane.....	176 packages
Cellophane with label.....	240 "
Boxes.....	211 "

From May 14 through May 28, we put out just the original boxes and the cellophane with label, with the following results:

Cellophane with label.....	201 packages
Boxes.....	160 "

You can draw from this almost any conclusion you like. The over-all figures do show that visibility is important, since the cellophane package with label was most consistently the best seller, no matter in what position it was placed. And note the importance of a label with a good name: the unlabeled cellophane packages ran a poor third in the final tabulation.

We know that shelf position is very important. It has been our experience that the first displays the buyer comes in contact with sell the best. In our S. Salina St. market our shoppers rotate counter-clockwise. We are, therefore, conscious of this in our arrangement of displays and positioning of merchandise on the shelves. But note that in these tests we neutralized the effect of position on sales by systematically shifting positions.

I hope the reader will not regard these experiments as at all final or conclusive. I am only writing about them in the hope of showing the manufacturer the necessity for going out and finding out for himself what attracts people to packages—and giving them more of that; finding out what keeps people from picking up certain items—and giving them much less of that.

It does not necessarily follow from my experiment that Mueller's should change to a cellophane package. That might be quite a task. The breakage in shipping might be prohibitive. However, if people could see a product in cellophane, they might stop tearing open packages to see what is inside. This would cure one of the super-market operator's headaches.

We note the peculiar habits of customers. For instance, on floor displays, we place a sign on top of a display of canned goods (Fig. 4). In many instances, these displays will collapse because people will not pick up the cans that support



4

4—Shoppers will not pick up packages that support sign; will dig around it until display threatens to collapse.

this sign—they will fish around it and under it until the display collapses. It is one of our chores to police these displays constantly and see that these collapses do not happen. I do not know why they do not pick up the sign and remove the item under it—I have asked hundreds of customers, and when I mention it they say, "Sure, I'd just as soon," and do it; but left to themselves they will not do it. To me, this shows that people will answer a questionnaire and state that they will do or not do a certain thing, when in fact they really do the opposite. In fact most customers seem unaware of what they actually will or will not do under any given set of circumstances.

No matter how well advertised a product may be, or how it sells, there are always extra sales for this product that can be had if the manufacturer will take advantage of the tremendous advertising possibilities that are practically free to him on his own packages.

It is an ad that costs him nothing in comparison to other media; it is a permanent ad as it stands on the shelf of the consumer. When the housewife opens her cupboard door and sees this product, it is certainly just as effective as the ad she leafs over in a magazine or newspaper.

As we find out more about the reactions of consumers in self-service stores, we are applying these findings to sell the type of merchandise that we wish to promote.

When Jim Corbett was asked what in his opinion makes a world champion, he replied that it was the ability to fight one more round. In our stores are many fast selling nationally advertised products. Although they do enjoy tremendous consumer acceptance, experimenting with better packaging might bring them that extra round that would put them far out in front.

PACKAGING PAGEANT



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1 Two interesting folding cartons for novelties, put out by Imperial Metals Mfg. Corp., Long Island City, N. Y., have been redesigned recently to give them more color and therefore more eye-appeal. Both cartons are printed in four colors—yellow, red, green and dark blue—and highlight the article within. The "Pepsal" carton holds the pepper and salt set along with its convenient plastic holder and the "Color Count" carton contains an educational toy consisting of plastic numbers in four colors. Cartons designed and made by Eastern States Carton Division of Robert Gair Co., Inc., New York.

2 A stock bottle, properly decorated, makes an attractive container for "Gallivanting," one of the sprightly colognes of Vita Ray of Jersey City. The glossy-surfaced, mauve-colored panel label helps to convey that custom look. Old-fashioned flower sprigs decorate two corners and the name of the product is in reverse print across the middle. The cap repeats the mauve color of the label and the whole is finished off with a hand-tied pink ribbon. As a special introductory offer, the new package is being featured for a limited time in department stores at half price. To date, reports indicate that the product in its newly designed dress is a definite success. Label, Wilton Printing Co., New York City. Bottles, Owens-Illinois Glass Co., Toledo, Ohio.

3 AirlinE Prune Juice packed by Max Ams, Inc., is making its bid for extra attention by means of a colorful new label to attract the eye to the self-service counters and shelves of the country. Designed by a well-known artist and lithographed in full color, retailers report that the new design not only enables the customer to find the bottle more easily but also saves much of the clerk's time. The brand name is given the most prominence, being reverse printed on a color strip across a reproduction of the fruit itself. Labels designed and printed by U. S. Printing & Lithograph Co., Cincinnati, Ohio. Bottles, Owens-Illinois Glass Co., Toledo, Ohio.

4 The latest Pond's package to appear on the cosmetic counters is this de luxe beauty box—made of resin-impregnated molded pulp and containing five fast-selling items—cold cream, vanishing cream, face powder, lipstick and rouge. The box itself with its distinctive quilted-design top is being promoted as a pleasant decoration for a dressing table. The base of the box is molded with depressions to hold the five products, each in its own cavity. There is a choice of color schemes for the box—pale green with a pink label and base or pink with a pale green label and base. The beauty boxes are packed one dozen to a shipping case, six green and six pink, with a selection of cosmetic shades.

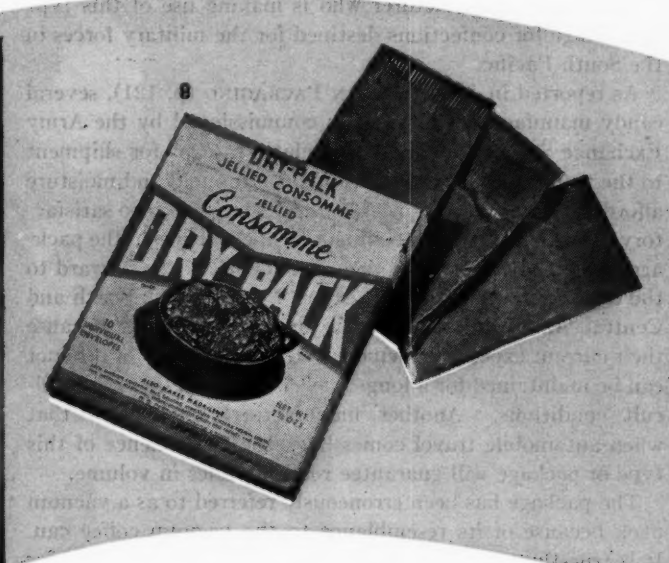
Promotion is expected to start on these new boxes on or about September first if supplies can be had in sufficient quantities.

5 Lipton's latest dehydrated soup mix, tomato vegetable with noodles, appeared on retail shelves last February in certain selected test areas. Heretofore, Lipton's soups have all been packaged in flexible containers and the results of these tests of the product in tin are being watched with considerable interest. Red and yellow are used generously on the label for shelf-appeal in various types of outlets. Two narrow panels on the back of the label are used for cooking directions and the statement of ingredients.

6 Leatherette cases which hold 150 lens tissues manufactured by A. Rosmarin, Brooklyn, N. Y., are made in two sizes and come in assorted colors. The cases are meant to be carried in the purse or pocket primarily by the wearer of eye-glasses. They are, however, used quite frequently in the scientific, industrial and photographic fields. The only decorative note on the neat envelopes are the white imprinted letters "eye glass tissues" and the pair of spectacles on the flap. Envelopes, The Beckhard Line, New York City.

7 A midnight-blue carton with lettering in reverse white shaded with tones of gray make an unusually effective package for "Scoop," the newest soapless crystals to lighten the housewife's labors. Since the product is not a soap and yet produces suds, the designing job on the package endeavors to put across this story. A clay-coated board printed in two blues and gray is spot-varnished to add gloss to the dark areas. Introduced just recently, at a time when there were practically no soaps on the retail shelves, retailers report immediate and phenomenal success for the new product. Package design by Jim Nash, New York City. Carton by Shuttleworth Carton Co., New York City.

8 A thin folding carton no more than four inches square holds ten small heat-sealed glassine envelopes of Dry-Pack jellied consommé. This is a new addition to the line of dehydrated foods put out by the Dry-Pack Corp., Lyons, N. Y. The package is decorated with shades of those high-visibility colors, red, yellow and blue. The reproduction of the jellied soup makes an attractive center spot—the deep brown-gold of the product contrasting well with the royal blue of the dish. Each of the glassine packets contains enough powder to make eight ounces of finished soup. On the back of the carton appear directions for use with several variations which add considerable interest to the dish. Carton, American Coating Mills, Elkhart, Ind. Glassine envelopes, Milprint Inc., Milwaukee, Wis.



Chocolates in cans . . . hermetically sealed



1—Huyler's lithographed tin container, like the familiar coffee can, is hermetically sealed, opens with a key. Internal protective packaging consists of individual cups for each chocolate, an inner insulated wall of corrugated waxed paper, discs of corrugated and padding paper for the top and bottom of the can.

The hermetically sealed metal package, according to present indications, may be expected to extend its sphere of usefulness considerably when metal cans again become more generally available. That is the prediction of at least one confectionery manufacturer who is making use of this type of package for confections destined for the military forces in the South Pacific.

As reported in June MODERN PACKAGING (p. 121), several candy manufacturers have been commissioned by the Army Exchange Service to supply chocolates in cans for shipment to the tropics because of the resistance to mold and moisture afforded by the metal can. The results have been so satisfactory that several of these companies expect to retain the package permanently. One of them confidently looks forward to the development of a sizable export business with South and Central American countries as definitely assured because their current experience demonstrates that quality of product can be maintained for a long "shelf life" under the most difficult conditions. Another manufacturer anticipates that when automobile travel comes back the convenience of this type of package will guarantee roadside sales in volume.

The package has been erroneously referred to as a vacuum pack because of its resemblance to the vacuum coffee can. It is true that vacuumizing is a part of similar processes for

many products, but vacuumizing of chocolates would cause disintegration of the product, whereas hermetic sealing at low temperatures keeps the contents in a condition that is proving highly satisfactory to the soldiers and sailors lucky enough to get them.

Cans have been used to package candy for a long time. The Dutch were the first to use the metal package for chocolate products, the house of Droste, Amsterdam, being the pioneer. Early arrivals in the A.E.F. of World War I were able to purchase French confectionery in friction top cans. One veteran recalls those packages with a high degree of satisfaction—whether because of the excellent quality of the French confectionery, the keeping power of the package, or just the soldier's normal craving for sweets he doesn't pretend to say. The impression of a superior product however, and an unusual package has lasted more than 25 years.

As with many products developed and packaged for use in the present emergency, the economy element was shoved to the background for the time being. But as in so many other cases, actual experience has provided a "know how" that has cut costs to the point where it is practical to use this container now, with the promise of greater economy for future civilian use. As the packaging operations are handled at present, it is the labor cost in filling, rather than the cost of

the container, that represents an out-of-proportion expense. Most of the manufacturers have a hand-packing line of operators, who select the assorted chocolates in paper cups and pack them in layers in the cans. Some of the makers who are planning to continue the use of this packaging anticipate that if the chocolates are individually wrapped in foil or a similar film it will be possible to adopt machine filling, using a check-weighing or net-weighing device. This would also permit them to drop the use of individual paper cups, as the foil would serve the protective purpose.

Neither the package material nor the package structure, in this instance, is charged with the full responsibility of maintaining quality of product. Knowing full well the havoc wrought on confections by unusual temperature and humidity conditions, the manufacturers have made certain modifications in the contents, such as treatment of ingredients and different selection of kinds of chocolates. Other practices, however, are strictly within the realm of packaging operations—pre-cooling, for instance. The usual temperature for chocolate packaging is higher than is required for these operations, which are carried on at 62–64 degrees. The chocolates are therefore put into the container under conditions that

make for retention of form, taste and texture for a considerable period of time.

Additional protection is afforded by interior “insulation” consisting of an inner wall of corrugated waxed paper, as well as discs of the same material at the top and bottom of the can. The hand-filling line of operators feed the filled cans to the hermetic sealing machine, which turns them out at the rate of 40 per minute.

CREDIT: Lithographed can and hermetic sealing machine, American Can Co., New York.

2—Hand-filling is performed in a 62° to 64 deg. temperature, by operators who make selection of assortment of candies, place them in waxed glassine cups, pack them in layers in the cans for delivery to the sealing machine.

3—Cans enter sealing machine from left, lids are fed in from stack on right, placed in position for plunger to perform hermetic sealing operation, are discharged onto the packing table at the rate of 40 per minute.





1—Light-weight but sturdy re-use box for perfume is covered with hand-colored embossed velveteen.

2—Sports Club toiletries line uses a veneer-kraft box covered with leather-embossed, heavy-weight, pyroxylin wax-coated paper.



PHOTOS 1, 2, AND 3, COURTESY WARNER BROS., CO.

A veneer-kraft lamination, the new high-strength material which the Quartermaster Corps is adopting to supplement the supply of V-board for shipping containers,¹ is also being adapted to interesting applications in consumer packaging. The strength, rigidity and light weight of the material permits it to be used as a base for almost any type of covering in the manufacture of decorative boxes.

The lamination consists of a single sheet of rotary-cut hardwood veneer with a sheet of pure sulphate cylinder kraft on each face. This type of paper has a very pronounced grain or fibre direction and in the construction of the board the grain or fibres of the cylinder kraft paper oppose the grain of the veneer, thus forming a panel in which the stresses are well balanced. Urea-formaldehyde resin is used as the adhesive and the lamination is formed in a hot-plate press at approximately 270 deg. F. and 250 lbs. pressure per sq. in.

Decorative containers for toiletries using this new material as a base have already been introduced by one box maker. In the course of extensive experimenting, it was found by this manufacturer that the material lends itself very advantageously to automatic manufacture on standard box machinery with only a few innovations and changes. This ease of manufacture is said to permit a price range never before attained in either wooden boxes or any boxes made of a material of equal strength.

The veneer-kraft box obviously has a considerable margin

of strength and durability over cardboard boxes of similar size and nature. As the Quartermaster Corps has previously reported, it has greater strength than solid fibre. Table I shows some of the physical properties of veneer-kraft in comparison with solid fibre. Table II shows the results of tension tests on the veneer-kraft material.

The new box will, of course, have a distinct weight and price advantage over most other wooden boxes.

The new material lends itself to a greater variety of coverings, which may be applied automatically, than does cardboard. As shown by the accompanying illustrations, the box for toiletries, now being produced, is covered with an imitation leather—a heavy weight pyroxylin wax-coated paper, leather embossed. Another box, designed for perfume, has been given an interesting sculptured, floral effect with a

TABLE I—COMPARATIVE TESTS, TEKWOOD* AND SOLID FIBRE

Weight per 1,000 sq. ft., lbs.	1/1,000-in. thick material	Nail-head pulling test	Shear test (with grain)	Shear test (across grain)	Mullen test
4.	#20 Tekwood (.082)	1.033	1.160	1.44	8.440
4.3	#16 Tekwood (.091)	1.374	1.154	1.51	8.044
4.3	#12 Tekwood (.112)	1.482	1.125	1.55	8.260
3.5	Solid fibre (.160)	.794	.538	.60	3.600

* Trade name of veneer-kraft lamination made by U. S. Plywood Corp.

¹ See "Veneer-Kraft Boxes to Save V-Board," MODERN PACKAGING, July '44, p. 141.

3—Another container currently being used in the Sports Club line suggests many interesting re-use possibilities.

4, 5 and 6—Weatherproof shipping containers made of the same strong veneer-kraft lamination are useful for air cargo or wherever light weight is an essential requisite. The containers can be made in cylindrical or rectangular shapes and with or without wood framing.

PHOTOS 4, 5, AND 6, COURTESY U. S. PLYWOOD CORP.

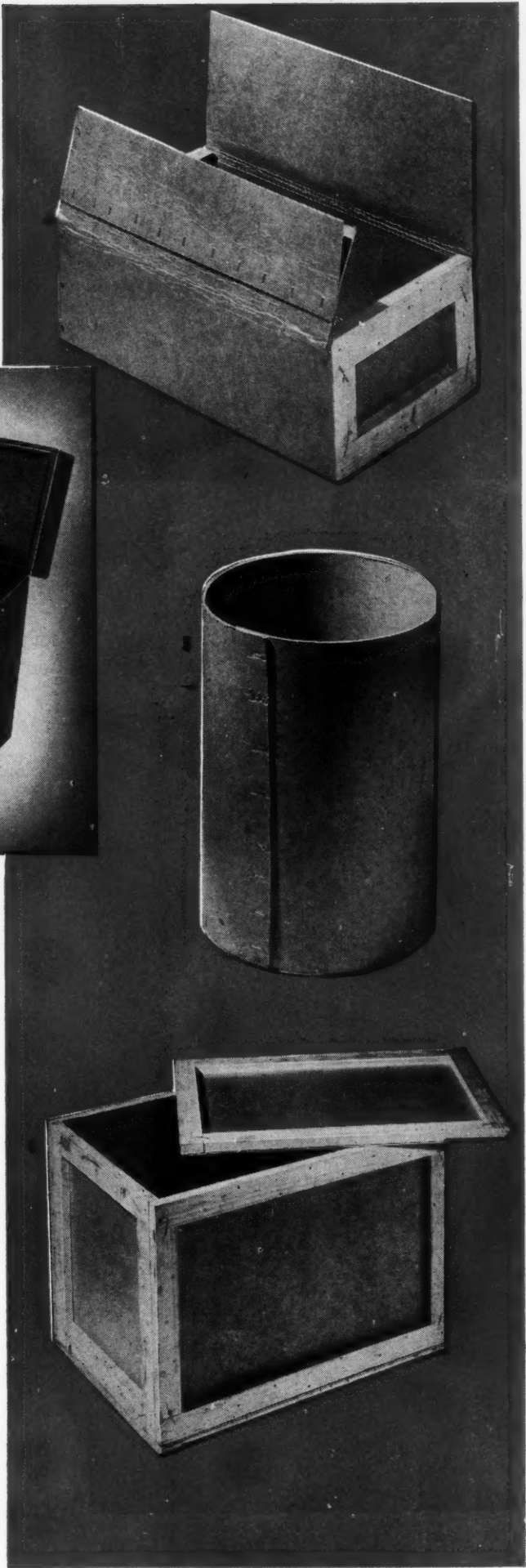


TABLE II—TEKWOOD* TENSION TESTS

Specimen	Width, in.	Thick- ness, in.	Area, sq. in.	Ult. load (16)	Ult. stress, psi.	Mod. of elast., psi. $\times 10^6$
With grain						
1-2	.505	.094	.0475	647	13,610	1.503
2-1	.521	.097	.0506	550	10,880	1.390
11-1	.520	.121	.0625	573	9,180	1.332
11-2	.512	.117	.0600	630	10,500	1.300
12-2	.514	.120	.0617	625	10,120	1.140
12-3	.519	.121	.0628	437	6,960	1.032
					10,210	1.283 Avg.
Across grain						
1x-2	.507	.095	.0482	167	3,470	.334
2x-1	.521	.095	.0495	162	3,270	.348
11x-1	.522	.119	.0622	166	2,670	.335
11x-2	.513	.120	.0616	162	2,630	.324
12x-2	.515	.118	.0608	166	2,730	.342
12x-3	.519	.120	.0623	167	2,680	.334
					2,910	.336 Avg.

NOTE: Moisture content at test for all specimens was 9%. Avg. wt. of $\frac{1}{8}$ " panel was 0.38 lb. per sq. ft. Avg. wt. of $\frac{1}{4}$ " panel was 0.45 lb. per sq. ft.

* Trade name of veneer-kraft lamination made by U. S. Plywood Corp.

covering of embossed velveteen, hand colored. Other boxes have been produced automatically with coverings of various cloths, simulated leathers, (Continued on page 164)



Display

1 Rogers Imports, Inc., makers of the Rogers Air-Tite tobacco pouch believes that a full range of counter and floor displays to meet the needs of any outlet is one of the best promotion media for its products. In line with this policy they have brought out a series of displays which range from the lithographed paperboard one shown at the top to a super-floor display of wood and glass, equipped with fluorescent lighting similar in appearance to the counter display shown. Displays lithographed by Consolidated Lithographing Corp., Brooklyn. Paperboard, glass and wood counter displays by Capitol Counter Display Co., New York. Counter easels and folding display cards, Shuttlesworth Carton Co., New York. Individual boxes by B. & M. Paper Box Co., Inc., New York.

2 Sweet 'n Lovely, by Parfait Sales, joins the newest group of cosmetics—those meant for the little girl under teen age. Line drawings tell the story of the four products: cologne, bubble bath, shampoo and hand lotion. The art work of the display follows the style of the packages. A slanting shelf at the base of the counter unit allows space in which to show actual bottles of all four of the items in the line.

3 The contents of the typical home first-aid medicine chest is the center of attraction in this full-color window display recently completed for Bauer & Black, makers of Curity surgical dressings. The products in the cabinet emphasize the things which every home should have on hand at all times. The two side cards feature some of the principal items in the Curity line. Display, Zippodt Inc., Chicago.

4 Featherweight Foods, Inc., Boston, Mass., uses a brilliantly colored shipper for its "Tatonuts," a potato tid-bit recently introduced to the retail market. The shipper, when opened and set up on the counter acts as a self-service display for the heat-



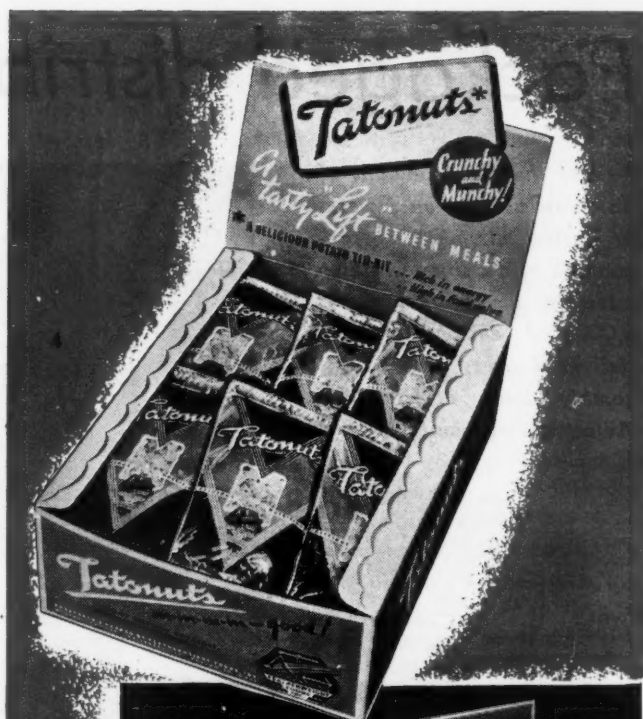
Gallery

sealed bags of nut-size delicacies. The product being new and unfamiliar to most housewives, the display is meant to do a selling job and to attract impulse sales. Carton, Eastern States Carton Division, Robert Gair Co., Inc., New York.

5 A giant window display in Macy's recently featured "Jewels in Jars," a promotion for the use of Karo syrup in the home canning of fruits. The photograph shows one of the shadow boxes which was part of the display. This one focuses attention on home canned apples and is labeled "Pearls for your pantry." Approximately 5,000 women were drawn to the demonstrations, attracted by a series of six of these shadow boxes dramatizing, in jewel-draped settings, jars of six types of fruits tested in the studies conducted by Corn Products Refining Co., makers of Karo.

6 Dr. Lyon's Tooth Powder uses a display without words for its latest point-of-sale advertising piece. The pin-up girl shown with the hat of the returning service man tells the complete story of a beautiful smile, well-cared for against the time that "he" returns. A recess at the base of the display is provided for a package of the product. Meant essentially for a counter display, this piece can also be used in a small window space to promote sales of the tooth powder. Display created and produced by Hussey-Woodward Inc., New York.

7 A centerpiece constructed in the form of a huge, third-dimensional recipe book, with an index along one side suggesting various foods and wines, catches the eye in this newest window display for Petri Wines. The picture of the food and wine is in full color and serves an educational as well as its usual promotional purpose. In this way, the Petri Wine Co. tells the consumer the right wine to use with various foods in the most painless manner possible. Display designed and produced by Einson-Freeman Co., Long Island City, N. Y.

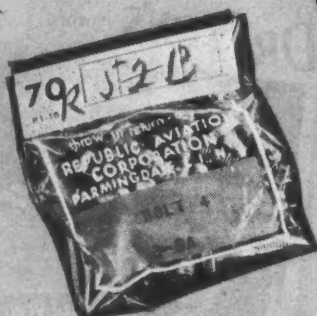


Packaged distribution for the assembly line

1—Just the right amount of hardware used by each worker during his shift is pre-counted and delivered packaged to his station daily. 8,000 of such packages, delivered every day to assembly lines at Republic Aviation, eliminate waste.



1



2—Nuts, bolts and rivets are packaged in printed cellophane envelopes. Rivet packages are printed in white; other hardware packages, in orange. Code data on the packages identify the hardware and tells station where it is used.

Packaging in the commercial sense is usually thought of as a means of getting a manufacturer's goods to market in the most convenient, protective consumer sales units.

Today an entirely new kind of packaging is being done daily in hundreds of big war plants. It is a method of "packaged distribution" to supply workers on assembly lines with just the right kinds and quantities of nuts, bolts and rivets for their day's shift at their work stations.

The extent of such packaging operations may be realized more fully by a specific example at Republic Aviation Corp., Farmingdale, L. I. In this plant 8,000 printed cellophane envelopes are filled and delivered daily with more than 850 different types of hardware used at the 80 or more typical work stations required for the cycle plan of production in making Thunderbolt P-47 fighter planes.

Such packaging is not only opening up hundreds of new

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outlets for packaging supplies and equipment, but is saving thousands of industry man hours and eliminating thousands of dollars worth of otherwise wasted hardware.

Although figures cannot be broken down to show exactly what part packaging has played in the production progress at Republic, the company knows it has been one of the big factors in helping to achieve the following record of speeding up production and in reducing the number of man hours required to make a Thunderbolt: 22,927 man hours in May 1942, 7,729 man hours in March 1944 and 6,290 man hours in September 1944.

Near the stock rooms in the Republic plant the visitor sees a department designated "Packaged Distribution." In this department every piece of small hardware used in the making of a plane is accurately selected, measured for quantity and packaged specifically for the correct station on the line where it is to be used.

Previous to the installation of this packaging system, small hardware was requested when needed from the stores division. Bulk supplies were sent out to the lines in boxes as they were received from the hardware suppliers. When a box was empty new supplies were requested. Daily there was excessive waste after each shift because of pieces that dropped on the floor. At the end of the day the fallen pieces were swept up and thrown away. To sort the dropped pieces out of the refuse would have taken too much time and money. There was also much confusion in getting the right hardware to the right stations at the right time. Now such waste and such mistakes cannot occur. Every piece of hardware—and there are several thousand screws, nuts, bolts and rivets in each plane—is accounted for. Each workman at the beginning of the shift receives just the right amount and the right pieces for the operation performed at his work station during that shift—all contained in a cellophane package—counted out and delivered by "Packaged Distribution."

This packaging procedure is determined by directives from Methods Engineering, which provides Packaging Distribution with complete specifications for every piece of hardware used at each work station. If two screws are required, say,

3—Fabric bag filled with exact count is used as measuring weight so that right quantity may be weighed out without hand counting. 4—Semi-automatic filling machine is used for filling rivet bags. 5—Bags are sealed in heat-sealing machine 6—Loaded into trays, the packages are delivered to stations by truck at the beginning of shift.

for securing a piece of electrical wiring, then as many times two as there are planes produced during that shift should be furnished to that station. This exact quantity is placed in a cellophane envelope and labeled with code number for delivery at the beginning of the shift to that station. A similar number is also packaged for the other shift of that day. When the packages are ready, they are delivered by motor trucks to the stations throughout the plant.

The packaging is done by women operators. Each woman makes out a requisition for the number and type of hardware pieces she will require for her packaging each day. All pieces are kept by number in tray shelves adjacent to her packaging station.

All rivets are packaged in cellophane envelopes printed in white. Other nuts, bolts and screws are placed in orange printed cellophane envelopes, so that there is no difficulty in distinguishing rivets from other hardware.

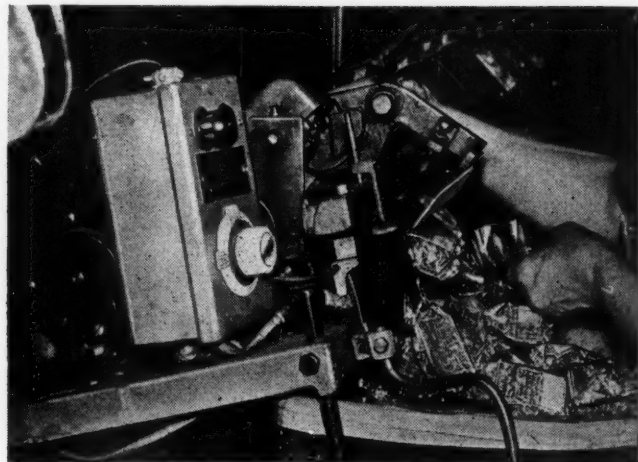
At first, all pieces had to be counted by hand, but now a semi-automatic volumetric filling machine is used for filling the envelopes with rivets. For other types of hardware, a simple scale is now used. A fabric bag filled with exact count is used as the measuring weight so that the right number may be weighed out on the scale without hand counting. After the envelopes are filled they are passed on to a heat-sealing machine or a stapler so that no pieces can be lost from bags insecurely closed.

The cellophane is printed on the outside with an opaque panel at the bottom. Identification of the hardware and work station destination are then code printed on this panel by addressograph. (See illustration page 126.) Also printed on the envelope are directions (*Continued on page 168*)

6



5



Flow packing . . . the British Army system

To provide for the shipment of supplies on a scale unprecedented in the history of warfare, Britain's Army Ordnance Depots have adopted a standardized system of packing in which flow methods, conveyor lines and simplified operations figure as largely as in a modern plant.

Previously, each Depot operated its own individual system, but with more than 6,000 personnel employed in packing, using all kinds of systems, it was obvious that much scope existed for the standardization of both methods and equipment. A committee, set up by the British Army's Director of Warlike Stores, accordingly investigated the packing methods of each Central Ordnance Depot and after also inspecting industrial setups, outlined a system which has now come to be known as "Flow Packing."

The system, which is being studied by U. S. Army officers in Europe, consists of bringing the packing cases and the stores to the operator at a pre-determined point on a conveyor line and, by breaking down operations so that each operator does only one job, insuring an uninterrupted forward flow from the time the packing cases enter the unit until they are finally packed ready for loading into road or rail transport.

Manufacturers and others who have to undertake case packing on a large scale may find much of interest in the principles which have been adopted.

The committee had to visualize systems for light, medium

and heavy packing and then to adapt them for postal and parcel packing, packing for normal home issues, for export to established bases overseas, for operational needs (such as for landing reserves and Advance Ordnance Depots), repetitive packing (i.e., large quantities of the same item) and assembly packing.

It was thought that of the two types of flow systems, i.e., narrow flow and broad flow, the latter could be more easily expanded to deal with heavier loads, while being less liable than the former to bottlenecks. The broad flow principle was there accepted as the basis of the flow packing plan, which consists essentially of a series of self-contained narrow-flow units operating independently of each other but fitting into the broad flow scheme by linkage through common "in-feed" arrangements. The principle is illustrated in Fig. 2. Each unit is capable of handling a certain quantity of work in a given time. If the consignment to be shipped is greater than the capacity of a single unit, the load may be distributed over several units so that the specified shipping dates can be met. Bottlenecks can be eliminated, within the limits of space available, by increasing the personnel at the bottleneck stage, or by spreading the load over several units and by making mobile the operators on the less difficult processes, so that they may serve two or more lines.

Light and medium packing units may be grouped together

1—Shipping cases are fed down chutes to packers from temporary storage on overhead platforms.



SKETCH PLAN OF BROAD FLOW SYSTEM OF PACKING

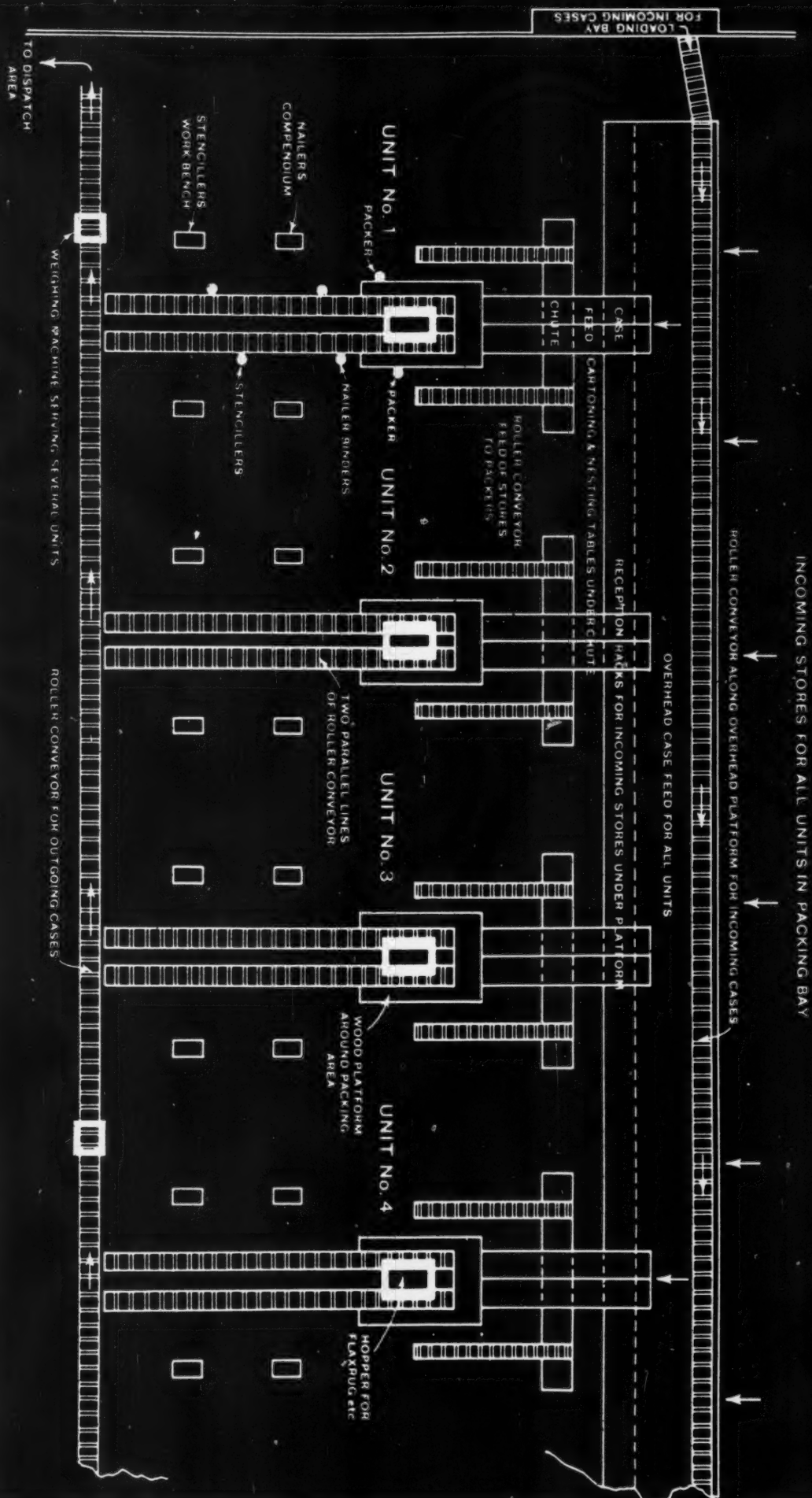
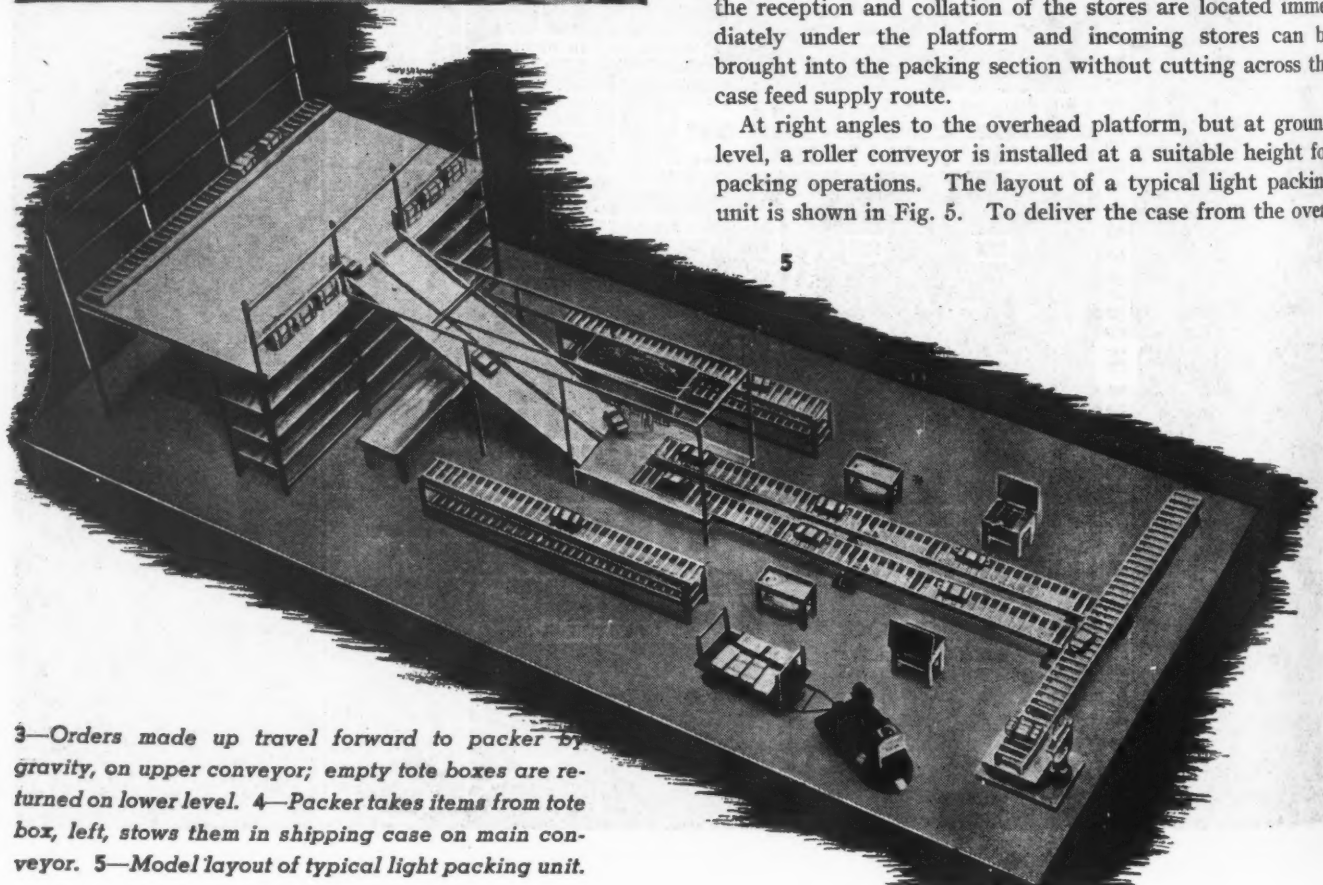


Fig. 2



3—Orders made up travel forward to packer by gravity, on upper conveyor; empty tote boxes are returned on lower level. 4—Packer takes items from tote box, left, stows them in shipping case on main conveyor. 5—Model layout of typical light packing unit.

or segregated, as space permits. The main difference between them is the weight and size of the goods which are to be packed. Light packing is broadly confined to articles of the cartonable variety, though there are, of course, other types of articles that can be included in this category. In the Central Ordnance Depots cartons also have to be nested when they are being packed to operational requirements (i.e., for landing reserves and Ordnance Field Parks). For this reason light packing units need cartoning and nesting benches. Provision must be made for the reception of stores, usually through open racks, accessible from both sides, permitting the stores to be fed in from one side and selected and collated for packing from the other side.

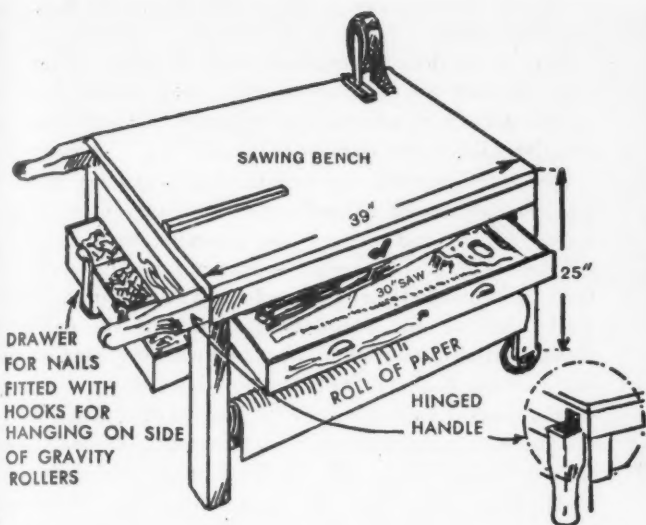
In medium packing units the articles are generally of a bulkier or heavier nature and racks are not so efficient for their reception as mobile platforms or trucks.

Overhead platforms (Fig. 1) are used for the temporary storage of cases until they are fed to the packer on light or medium lines. The overhead storage and supply system brings the right type of case to the packer with a minimum use of manpower and disturbance to packing operations in progress and does not use up valuable floor space for stacking empty cases.

The overhead platform can be laid on tubular scaffolding at a height allowing adequate clearance for all operations taking place below the platform. Methods of loading the cases onto the platform vary according to the layout of the packing section. Where the section occupies the whole length of a building, or is conveniently situated at right angles to an outer wall, the cases may be fed in to the platform through an aperture in the wall. Vehicles delivering the cases need not, therefore, enter the building. Where access to an outer wall may be inconvenient, the stock of cases may be replenished by means of mechanical (slat) conveyors from floor level.

The bins, racks, or trucks which are necessarily needed for the reception and collation of the stores are located immediately under the platform and incoming stores can be brought into the packing section without cutting across the case feed supply route.

At right angles to the overhead platform, but at ground level, a roller conveyor is installed at a suitable height for packing operations. The layout of a typical light packing unit is shown in Fig. 5. To deliver the case from the over-

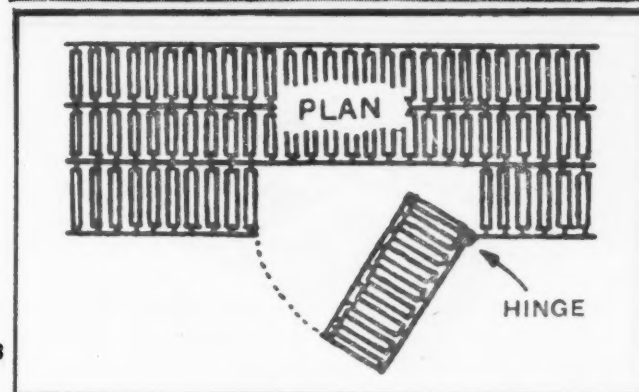


6—Packers of medium and medium-heavy items are provided with small portable work benches, fitted as shown. 7 and 8—On medium-heavy lines, where wood blocking is fitted in cases, section of conveyor is hinged, mounted on castors so it can be swung out temporarily for free access.

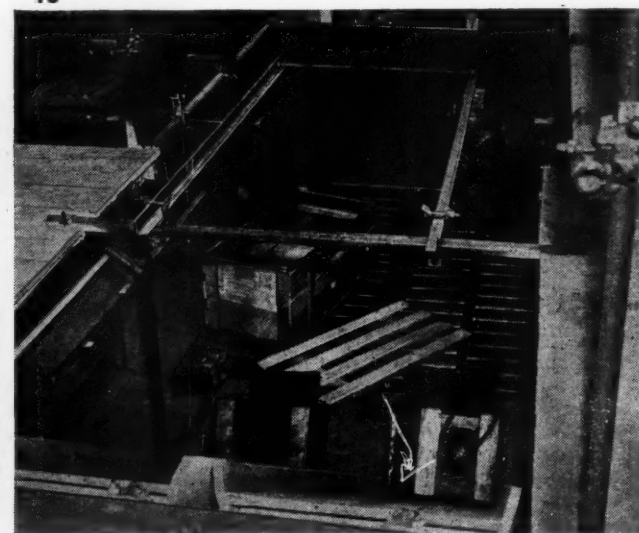
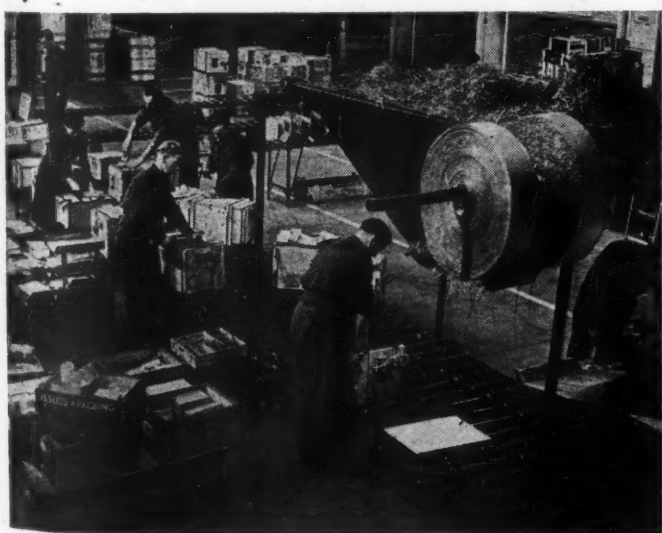
head platform to the packer on the conveyor line, a chute is provided (Fig. 1).

To bring the stores to the same point various methods are possible. They usually resolve themselves into bulk delivery from the main stores to the reception and collation racks or trucks, followed by nesting and cartoning where necessary, and then by segregation into lots of suitable weight for packing. This work is done by selectors who group together the stores required for shipment to one destination and subdivide them into lots not exceeding 80 lbs. in weight. These lots are placed in trays or containers for feeding to the packer.

The feed arrangement consists, usually, of auxiliary lengths of roller conveyor connecting the nesting tables with the packing area (Fig. 3). The containers are placed on the conveyor and travel forward by gravity to the packer. They remain on the conveyor until emptied by the packer (Fig. 4), and are then placed on a lower run of gravity rollers for re-



9—In medium packing, the articles are assembled and brought on trucks directly to the packer. Note the handy overhead hopper of excelsior and rolls of corrugated paper. 10—If the excelsior hopper is fitted with castors and suspended on a track, it may be rolled to overhead case feed platform for replenishing.



turn to the nesting tables. This method permits the selectors to build up a reserve of stores for each packer.

Medium packing does not involve cartoning or nesting and therefore nesting tables, bins, racks and so on are not required. Articles are brought to the unit in bulk on stands or trucks, are selected and assembled into lots of not more than 80 lbs. and placed on other trucks which can be moved into the area immediately behind the packer (Fig. 9).

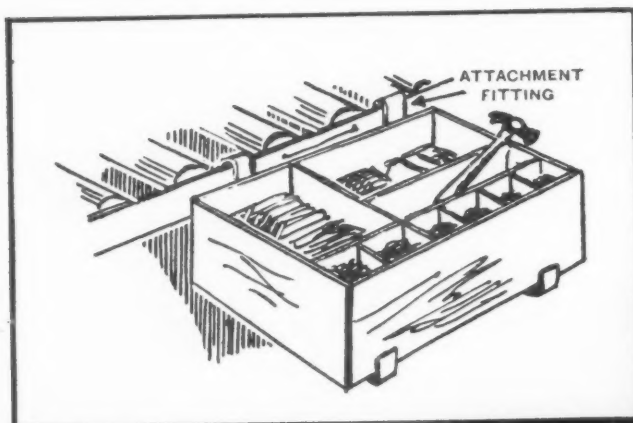
For all types of packing, the appropriate materials are provided within easy reach of the packer. Such materials as flaxrug, straw, or excelsior may be placed in an overhead hopper so arranged that its mouth is positioned directly above the case being packed (Fig. 9). It is then only necessary for the packer to pull the appropriate quantity of material from the mouth of the hopper and feed it with the minimum of waste motions into the case below. If the hopper is fitted with castors and suspended in runways (Fig. 10), replenishment from the overhead case feed platform becomes possible. Corrugated paper, in rolls, may be suspended overhead upon an arm of the tubular steel framework. Waterproof bag liners are delivered inside the cases themselves.

The packer on receiving the tray of collated stores scans the contents before packing as a double check on the selector's assessment of weight and then signals the overhead case feeder and "calls down" the type of case he requires. This is admittedly useful for double check purposes, but in certain depots where a "build-up" of collated stores is standard practice, the collator will already have called down the case for each lot as fed to the packer and the cases will be ready

to hand in the same succession as the stores which are to be packed in them.

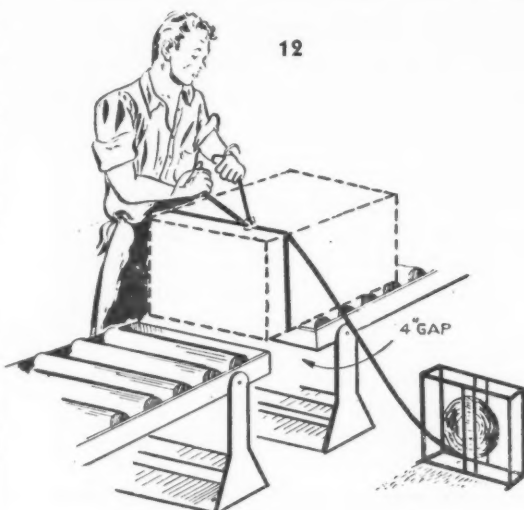
The packer does nothing but pack. It is his or her job to place the stores in the cases in such a way that all possibility of movement is eliminated and with suitable padding to protect the articles from damage in transit.

Packers of medium and medium-heavy articles, which frequently have to be secured inside the cases by internal fittings, blocks and wedges, are provided with small work benches (Fig. 6) fitted with a drawer for nails, screws and bolts, and another for such tools as a saw, hammer, chisel, mallet and so on. The drawer containing the nails is removable from the bench and is fitted with brackets for hooking over the conveyor rails. Below both drawers a bottom shelf affords storage space for cut lengths of timber which are used in the construction of internal fittings. A small bracket for a roll of tape may also be fixed to the top of the bench when necessary. The bench is mobile in wheelbarrow fashion, with castors attached to two legs and small hinged handles at bench top level at the other end.



11

11—Tray with all necessary supplies for nailing is hung over side of conveyor where needed. 12—At metal strapping point there is a 4-in. gap in conveyor to facilitate strapping. 13—Following nailing and strapping, flow speeds up, quadruple conveyor is cut to two lines.



12



13



14

On the more difficult, medium-heavy packing lines, where fitments such as cradles have to be built into the case, the packer's work can be simplified by including in the runway a short section of rollers, mounted on castors, which can be swung out at right angles to the runway proper (Figs. 7 and 8). This enables the packer to have free access to all sides of the case. When he has completed the packing, he merely pushes the runway back into the line and the case is free to move on to the next operator, the nailer-binder. This operator seals the waterproof bag liner, places the necessary paperwork inside, nails on the lid and by means of a portable hand-operated machine tightens and seals the wire or metal strapping. The same operator also nails to the outside of the case a metal cover under which is placed a waterproof bag containing the contents listed.

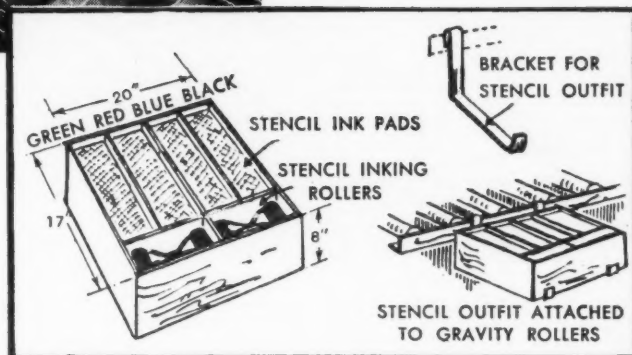
The nailer-binder requires a hammer, nails, screws, staples, waterproof bag and metal covers, which are placed near at hand in a nailer's kit (Fig. 11), hung over the side of the roller conveyor in much the same way as a packer's box. He also needs a tin of bitumenized adhesive and a brush for sealing the bag-liner.

To facilitate the binding operation, which requires the application of a wire or metal strap around the box, it is recommended that the conveyor line be broken, leaving a gap a few inches wide (Fig. 12). The case may then be stood in an appropriate position over this gap and the wire or metal strap be brought through it and under the case prior to tightening up. The wire or metal strap is normally held in a spool in a portable framework container.

In most light packing units and in many medium units, working experience has shown that two parallel lines of roller conveyor are adequate for most operations on the line. It may be, however, that at the packing and the nailing and binding stations on medium and medium-heavy units, more width is necessary to allow the operators to maneuver the cases. Some depots, therefore, install three or four parallel lengths of conveyor extending far enough to clear the nailer-binder's area.

But the next operation of stenciling may not necessarily occupy as much time as the previous two operations, allowing

14—Stencilers work facing each other on two parallel lines. This principle is followed generally at each stage of the operation; it is found inadvisable to have two operators working side by side. 15—Stenciler's kit is hung over the side of conveyor, on the gravity rollers. 16—When not in use, stencilers' kits are stored in the top compartment of this portable, central stenciling work bench.

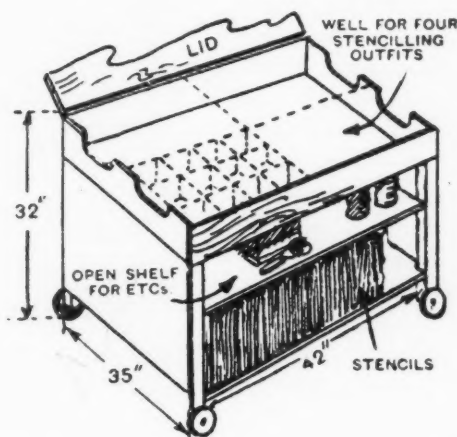


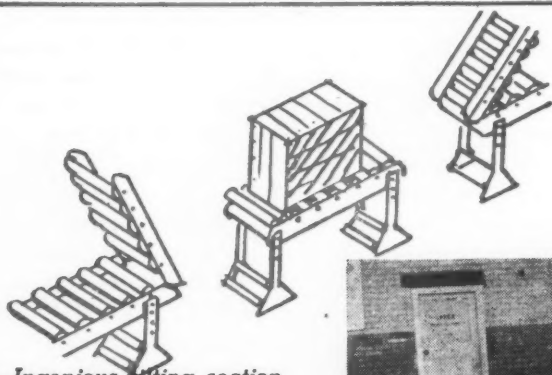
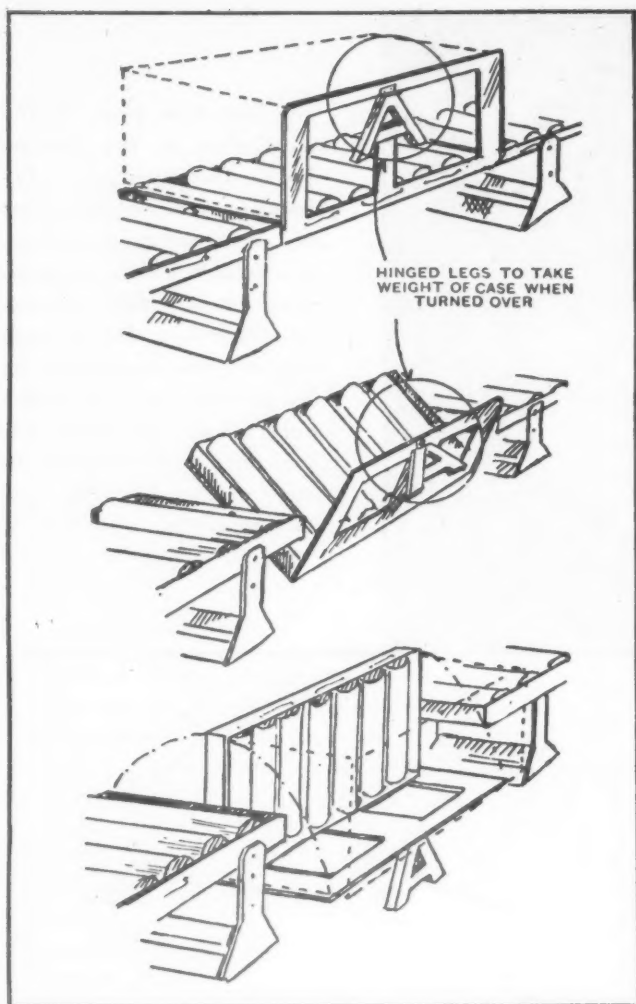
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work to move along at a quicker pace. In such circumstances it would be quite unnecessary to continue the quadruple or triple lines and beyond the nailing-binding area only one line is extended (i.e., the center one). Where four lines are in use only the two center lines need be extended (Fig. 13).

It will be appreciated that there is no standard practice, though for all the simpler and speedier forms of packing there is much to be said for the provision of the two parallel lines, from one end of the unit to the other, with a set of operators on each line, working facing each other (see Fig. 14). Much will depend upon the type of packing, and the relative suitability of one, two, three or four lines will quickly establish itself in relation to the speed of the packing, nailing-binding and subsequent operations. In reaching a decision the aim

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17—Ingenious tilting section of conveyor is used to tip cases for stenciling top and two sides. 18—On heavy packing lines, where tilting would be dangerous, lift-up sections are provided to give stenciler access to all sides of case. 19—Final operation is weighing. One scale serves a number of packing lines. Finished shipments are shifted to run-out conveyors going to shipping dock.

17 should be not to have two packers, two nailer-binders, or two or more stencilers working side by side, as this merely complicates the flow principle and involves the use of by-pass lines. These are seldom successful on a short run.

Stenciling usually follows nailing and binding. It consists of the marking, in various colors, of the destination of the case and a description of its contents. The stenciler uses a stenciler's outfit (Fig. 15) which is hung over the side of the conveyor. The box is divided into four compartments or troughs in which are laid the stenciling pads. At one end of the box there are deeper compartments for the stencil rollers. There is one roller for each color and, of course, one trough for each color. Each stenciler has her own kit of tools; it is thought that this encourages better care and maintenance of the outfits. During meal breaks, off-duty periods and so on, the stencilers' outfits may be placed in a top compartment or well in a central stenciling work bench (Fig. 16). In addition to the individual outfit, the work bench contains a shelf for the storage of inks and paints and a lower shelf which accommodates the stencils in use on the line. An alternative form of accommodation can be constructed on a flat-topped table with open slots or compartments in which the stencils may be stood (Fig. 14).

Stencilers, like all other operators, can be mobile, liable to transfer during peak-load periods from one packing unit to another. When they move, they take their stenciling outfits with them and place them on the conveyor in their new locations.

Provision must be made, of course, in all packing setups for the cutting of stencils. The depots generally have a stencil-cutting machine, or a small work bench at which paper stencils are cut from master patterns by operators using knives or sharp pointed instruments. The hardened steel scriber known to engineers would be a suitable instrument; better still is the "pin vice" or adjustable scriber, having a small collet capable of gripping a gramophone needle.

During stenciling operations letters have to be applied to the top and two sides of the case. On the lighter packing lines it may be considered simple enough to tip the cases over, but this renders the markings liable to smudging before they are dry. It is also a practice which (Continued on page 170)

18

19



"Old Hat"...



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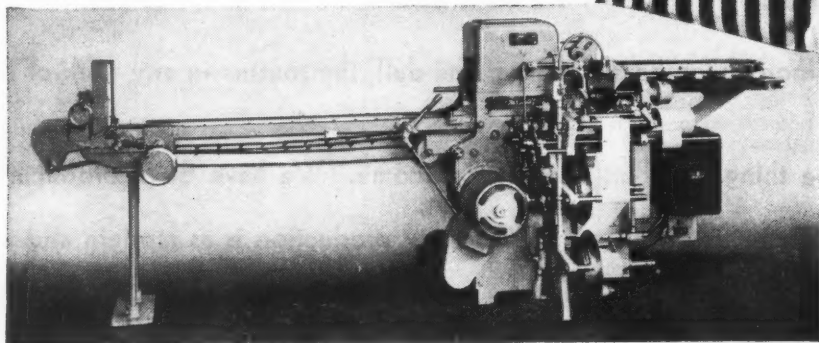
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TECHNICAL SECTION:

TECHNICAL

EDITOR

CHARLES A. SOUTHWICK JR.

Water-vapor permeability . . .

what it is and how it works

*by Capt. William H. Aiken, P. M. Doty and H. Mark**

Any self-supporting film or sheet which is supposed to perform satisfactorily as a modern packaging material must fulfill a number of requirements.

First, there are its *mechanical* properties, such as resistance against tear and tumbling, tensile strength, impact strength and resistance against repeated folding. Then there are *thermal* properties, such as the capacity of maintaining reasonable mechanical qualities down to low temperatures without exhibiting brittleness and, the equally important quality, to support elevated temperatures without becoming soft and sticky.

Another important property of a film used as packaging material is that it should be an *effective barrier* against *gases* and *vapors*, particularly against water vapor. In some cases this *water-vapor impermeability* is used to keep outside moisture away from the packaged materials; in other cases it serves to prevent the protected goods from losing their moisture content if stored for long periods in a very dry atmosphere.

Still other important qualities of a high-grade packaging film are *transparency*, *odorlessness*, *heat-sealing* and the failure to develop *static charges* when run through the packaging machine.

This list shows that the successful commercial production of a satisfactory packaging film is a complicated problem, which must be approached gradually by developing better and better compromises among the essential properties enumerated above.

Experience has shown, however, that compromising in technical problems is a very delicate task and requires a considerable amount of insight in the fundamental aspects of the various properties, which have to be balanced against each other. It is comparatively easy to obtain extreme values for one specific property of a material, such as the tensile strength of a fibre, by pushing certain technological processes such as spinning and stretching to higher and higher limits. In many cases it has sufficed to exaggerate more and more, certain processing conditions in order to accentuate one individual property of the product. But in doing so, one has almost invariably sacrificed other qualities of the material to a considerable extent.

It is not our intention to pretend that successful compromising of a number of equally important properties cannot be fostered and advanced by an empirical trial-and-error approach, but we believe that a sound understanding of the

fundamental background of each of the qualities involved can greatly accelerate the attainment of a satisfactory balance among all of them.

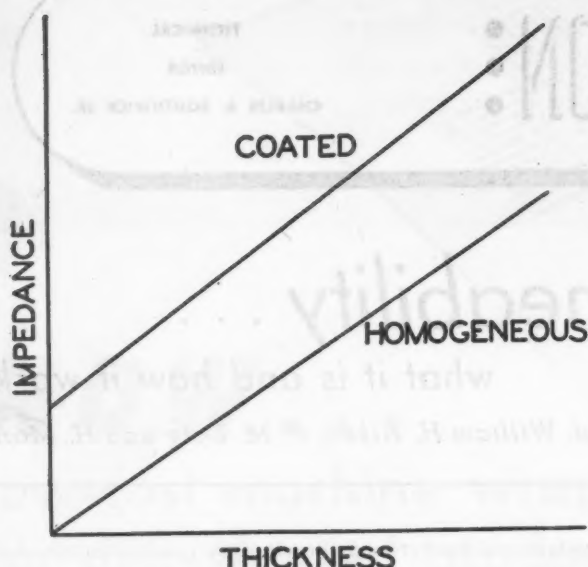
It was for this reason that, upon request and with the financial aid of the Quartermaster Corps, a series of experiments were carried out at Brooklyn Polytechnic Institute with the goal of obtaining a better understanding of the way in which a molecule of a gas or vapor can penetrate through a solid film. This article intends to give a brief description of some of the results in such a way that it may appeal also to a certain extent to non-technical readers.

Structure of film-forming materials

If one wants to understand how a molecule of oxygen or water manages to penetrate through a film, it will be necessary first to get a certain picture of the structure of the film down to such small dimensions as the molecule itself represents. It will also be well to point out here that we shall disregard the penetration and the flow of the vapor through pinholes or capillaries, which are very large in comparison with the diameter of the diffusing molecule. It will be remembered that the largest diameter of a water molecule—which is not exactly spherical but has about the shape of a heart—is about three Angstrom units (3×10^{-8} cm.). If there are capillaries or pinholes in our film which have a diameter of 100 Å or more, the gas will just flow through these capillaries as water pours through a sieve or a fabric. In such a case the frequency and the width of these capillaries are responsible for the transmission, and not the chemical and physical nature of the film. Experience shows that modern self-supporting

This scientific analysis of factors affecting water-vapor transmission through thin films is interesting because it indicates dependence of transmission values on both chemical composition and mechanical structure. The importance of many other factors, such as temperature and humidity, are clearly explained. QMC should be commended for sponsoring it and it is to be hoped that this work can be continued so that more fundamental data can be developed.

* Brooklyn Polytechnic Institute, Brooklyn, N. Y.



Diagrammatic representation of the variation of impedance with the thickness of coated and of homogeneous films.

films, such as cellophane, vinyl chloride polymers and copolymers, polyethylene, Saran and polyvinyl butyral, do not have any appreciable amount of such large and coarse through-going capillaries. It may well be that a certain number of them develop, as the material ages chemically, or is maltreated mechanically, but the original films do not exhibit any typical *pinhole permeability*.

It seems, therefore, that the intrinsic chemical and physical structure of the film has to be made responsible for the resistance which it offers to the migration of the vapor molecules. Metal foils, such as tin, lead and aluminum, are known to allow only very little permeation of such gases as nitrogen, oxygen or water vapor, and it may be worth while to use them to start constructing a relationship between film structure and permeability.

All metal foils used as water-vapor barriers are known to be crystalline. According to microscopic and x-ray investigations, such films consist almost entirely of small crystallites (having diameters between 10^{-3} and 10^{-7} cm.), which are somewhat oriented by the rolling or drawing during the production of the foil. These crystallites are very densely packed systems with no interstices or free space at all to speak of. The atoms of the metals are spherical (or nearly spherical) particles, which pack easily and tightly and eventually may provide for many empty holes of a few tenths of an Angstrom diameter, but hardly ever of such a size that a water or oxygen molecule could be accommodated therein. In other words, the crystallites of a metal are completely impermeable to water vapor.

These metal crystallites, of course, have to be cemented together; otherwise the film would disintegrate into a fine powder. The binding of the crystallites to each other is effected by very thin layers of disordered (amorphous) metal, which in most cases includes the impurities of the sample, such as other metals, oxides, sulfides, etc. These cementing layers are only a few Angstroms thick and, although they are somewhat less densely packed than the crystals, they represent only a small percentage of the whole material and do not offer to a gas molecule much chance for migration. It is very

probable that all the permeation which does take place through metal foils occurs inside these disordered domains, but such permeation is known to be slight, and one can understand this from the fine structure of the film and from the size of the water molecule.

The situation is different in a film made from an organic polymer, such as cellulose, cellulose acetate, polyvinyl derivatives, etc. Here also part of the material is built up from small crystallites, which in most cases are somewhat smaller than metal crystals and have dimensions between 10^{-4} and 10^{-6} cm. There is every indication that in most cases these crystallites are so densely packed that H_2O molecules cannot (or only very slowly) penetrate through the crystallized domains themselves. But, in most films made of organic polymers, there exists a comparatively large fraction of the material (20 to 60%) in the disordered state. This disordered or amorphous fraction of the polymer seems to be mainly responsible for the migration of water vapor and other gases, such as oxygen and nitrogen, through the film.

The molecules of organic polymers are not small spheroidal particles, but they are very long flexible chains with bulky groups sticking out in a rather irregular fashion. The extended length of these chains depends upon the degree of polymerization of the material, and in general is about 1,000 times their diameter.

Other properties such as smoothness or bulkiness, internal flexibility or stiffness depend mainly upon the chemical nature of the material under consideration. Cellulose chains are comparatively stiff and bulky as are the chains of polystyrene; polyisobutylene and polyisoprene are bulky but flexible, while polyethylene, nylon and polyvinyl alcohol are smooth and flexible.

As one casts a film of such materials, a certain number of the chain molecules will succeed in arranging themselves in a regular way to form crystallized areas. Obviously, this number will depend very distinctly upon the conditions under which the film is cast, such as type of solvent, concentration of solution, rate of solvent evaporation, etc., but it will depend also upon the molecular properties of the polymer itself, such as flexibility of the chains, geometrical bulkiness of the chains, groups of strong mutual attraction along the chains. The more crystallites are formed, the lower, in general, will be the water-vapor permeability of the film, because the crystals do not contribute noticeably to the permeation. Those chains, or parts of them, which do not succeed in arranging themselves regularly, form the disordered or amorphous constituents of the sample.

These amorphous areas might be compared with a big heap of long (1,000 in.), thin (1 in.) snakes, each of which has swallowed a large number (300 to 400) of small frogs, which are now distributed as protruding bumps all along its length. If several hundred of such snakes were loaded into a freight car, one would have an approximate idea of the state of the molecules in the amorphous area of a polymer. These snakes will never be completely at rest and neither will the molecules. Because of the bulkiness of each single chain there will always be empty spaces around it. As the chain carries out convolutions these holes will disappear and reappear at another place, and if a small particle (comparable with the diameter of the chains) is placed into such a hole, it will carry out an irregular diffusion through the system. A man could not move through the freight car filled with the snakes, but a small animal, such as a mouse or a beetle, certainly could.

It seems that the permanent fluctuations in the configuration of the long-chain molecules inside the amorphous regions

provide for a certain degree of diffusion of the small molecules through the material. This appears to be one important factor contributing to the permeability of a film made of an organic polymer.

The other factor is the presence of certain groups which attract water and tend to keep its concentration high. Some polymers, such as synthetic rubber, polyethylene and polystyrene, do not have such groups; they are water repellent or hydrophobic. Other materials, such as polyvinyl alcohol, cellulose or starch, are very hydrophilic; while others again, such as cellulose acetate, polyvinyl chloride and polyvinyl butyral, are in between. It seems understandable that hydrophobic materials should have intrinsically a better chance to be a good water-vapor barrier than hydrophilic polymers. This is true provided that one succeeds in bringing them into a sufficiently dense (crystalline) state.

The ultimate water-vapor permeability is therefore determined by two factors: (1) the density and proportion of the disordered areas, and (2) the hydrophilic or hydrophobic nature of the polymer.

It seems that the operation of these two principles allows a fairly good understanding of the permeability of the most important films, and we shall now present a few recent measurements and their interpretation according to the general picture as developed above.

Measurement of water-vapor permeability

The cup method of determining water-vapor permeability has become recognized as the standard routine method in America. Careful control and development by a large number of workers have eliminated a number of its defects. Some inherent difficulties remain.

For example, a long test period is required (2 days to several weeks) during which the sample may change. The driving force for a permeation—that is, the difference in the concentration of water vapor across the film—is often dependent upon the amount of circulation of humid air attained. Furthermore, for a given concentration difference of water vapor across the film there is a corresponding air-pressure difference in the opposite direction. This results in a measurement

which is the difference between water-vapor permeability and air permeability. The fact that water-vapor permeability is usually about five to ten times as large as air permeability considerably minimizes this error.

In view of these difficulties and the general inflexibility of the method we have turned to a vacuum method of measurement suggested by Barrer's work¹ on the diffusion of permanent gases through organic membranes. This apparatus and its use have been described elsewhere² and here only some of the results obtained will be discussed.

In principle, the method consists of mounting the film in a cell which can be evacuated on both sides. Water vapor is then admitted to one side and the increase of pressure on the other side is measured frequently over a period of about one hour. An outstanding advantage with this method is that the amount of vapor which permeates the film is determined by measuring the *volume*, not the weight. This is an increase in sensitivity of about a thousand-fold over the cup method and is responsible for the short time necessary for the measurement.

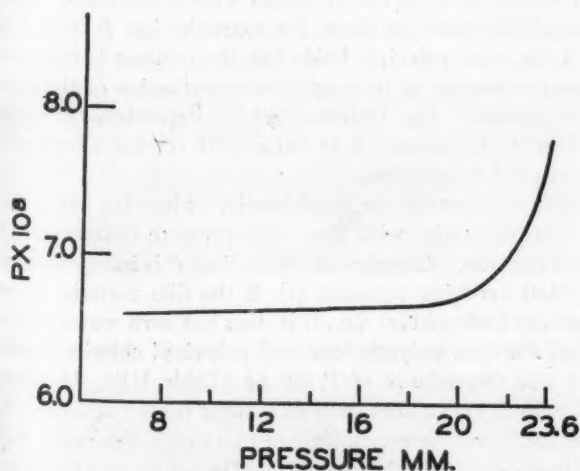
Measurements over long periods of time and values obtained for some TAPPI Standard Films demonstrate that true equilibrium is attained rapidly under the conditions of our experiment.

Under ideal conditions, one would expect that the amount of water, Q , which will pass through a film at a given temperature depends upon the area, a , the thickness, l , the vapor pressure difference, Δp , and the time, t , according to the following equation:

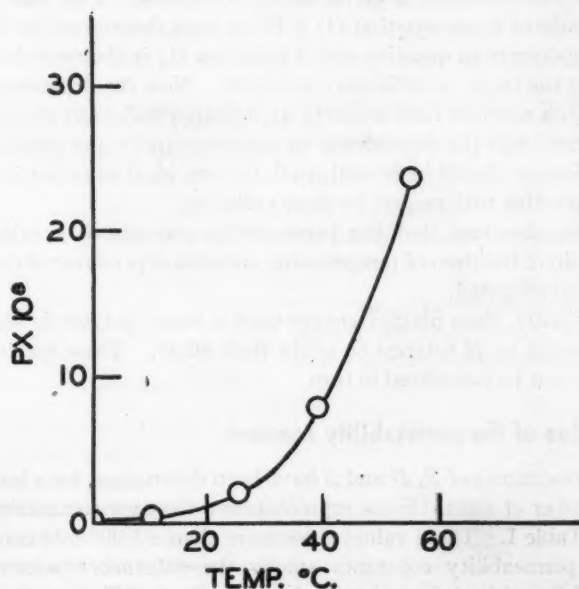
$$Q = P \frac{a}{l} t \Delta p \quad (1)$$

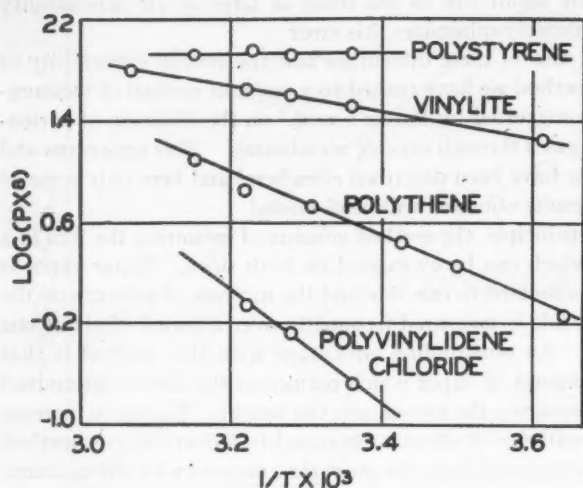
P , the proportionality constant, is termed the *permeability constant*, and characterizes the resistance to water-vapor transmission for the material under consideration. In our work it is defined as the cubic centimeters of gas at standard temperature and pressure passing per second through a membrane one square centimeter in area and one millimeter thick when there is a pressure difference of one centimeter of

Diagram showing the permeability of natural rubber.



Permeability of polythene as a function of temperature.





A logarithmic representation indicating P vs. $1/T$.

mercury. The following equation may be used to convert the values of the permeability constant into units of grams/square meter/day.

$$\text{g./m.}^2/\text{day} = 6.94 \times 10^5 \frac{\Delta p \text{ (cm.)}}{l \text{ (mm.)}} P \quad (2)$$

It is actually possible to divide this permeability constant into two component factors which correspond to the quantities mentioned in the previous section that governs permeability. One of these, the effect of density and proportion of crystallinity, is measured by a *solubility coefficient*, S , which denotes the solubility of water vapor in the film. It was previously shown² that the permeability constant is proportional to the product of these two factors; i.e., $P = 10 DS$ for the units used in our work.

The fundamental problem of water-vapor protection in packaging is the determination of the amount of water vapor transmitted under a given set of conditions. This can be calculated from equation (1) if P has been determined at the temperature in question and if equation (1) is shown to hold over the range of variables considered. Now the dependence of Q on area and time would be as indicated under any circumstances, but the dependence on thickness and vapor-pressure difference should be investigated, for non-ideal behavior may be possible with respect to these variables.

We also find that the permeability constant is a rather sensitive function of temperature, and this dependence should be investigated.

Finally, since plasticizers are used in many polymeric films it would be of interest to study their effect. These matters will now be considered in turn.

Value of the permeability constant

The values of P , D and S have been determined for a large number of films. Some representative data are summarized in Table I. These values show more than a 5,000-fold range in permeability constants among the substances selected. This roughly defines the portion of a permeability spectrum covered by synthetic organic films.

TABLE I—PERMEABILITY CONSTANTS OF FILM MATERIALS AT 25°C.

Material	$P \times 10^9$	$D \times 10^8$	S
Cellophane (TAPPI std. sample)	4.7	0.39	1.20
Pliofilm (TAPPI std. sample)	1.3	0.15	0.88
Polyethylene	2.1	0.48	0.44
Polyvinylidene chloride (Saran)	0.14	0.11	0.13
Polyvinyl chloride-acetate copolymer VYNW	32.5	2.18	1.49
3-ply glassine	1.2	1.2	0.10
Ethyl cellulose	510	10.3	5.0
Polyvinyl chloride	15.6	2.69	0.58
Natural rubber	73.0	2.17	3.35
Polystyrene	78.0	3.0	2.6

Lower values of P are found only in flawless metal foils and higher values, of course, are found in papers and textiles.

Dependence of permeability constant on thickness and vapor-pressure difference

The permeability constant has been measured on a number of series of samples of different thickness and identical composition. In general, it is found that for homogeneous films the permeability constant is independent of thickness, showing that the dependence assumed in equation (1) is valid. Taylor, Herrmann and Kemp³ demonstrated this for polystyrene. A few other examples are given in Table II.

TABLE II—EFFECT OF THICKNESS ON PERMEABILITY CONSTANT

Material	Thickness (microns)	$P \times 10^9$
Polyethylene	58	2.38
Polyethylene	105	2.46
Polyethylene	163	2.40
Polyvinyl chloride, plasticized	100	69.5
	150	67.5
Koroseal	47	4.6
Koroseal	99	6.4
Koroseal	134	4.5
Koroseal	150	4.1

Variations toward larger permeability constants are often noticed in going to thinner samples. This is most likely due to the increasing importance of surface imperfections and thin spots.

In sandwich-like films such as cellophane, where a relatively poor water-vapor barrier is coated with a substance of low permeability constant (wax, for example, has $P = 0.2 \times 10^{-9}$) the same principle holds but the relation is not quite as simple because of the negligible contribution of the thick middle section. Fig. 1 summarizes this dependence by showing how the impedance, $1/Q$, varies with thickness for homogeneous and coated films.

There now remains the consideration of how the permeability constant varies with the vapor-pressure difference, Δp , across the film. Experiment shows that P is independent of Δp , thus verifying equation (1), if the film material is not unusually hydrophilic; i.e., if it does not sorb water vapor. Saran, Pliofilm, polyethylene and polyvinyl chloride do not show any dependence of P on Δp (Table III). However, hydrophilic substances such as natural rubber and cellulose show increasing permeability constants with increasing relative humidity. Fig. 2 demonstrates this for natural rubber on the basis of data obtained by Taylor, Herrmann and Kemp.³

In Table III are shown some data on uncoated cellulose sheeting and cellophane at (Continued on page 166)

Simplified WVP test of papers and films

by A. W. Schwab, L. B. Falkenburg and J. C. Cowan*

A simple, convenient and accurate method for the determination of water-vapor permeability of papers and films at a relative humidity of approximately 95% on one side of the film, 0% on the other and at a temperature of 100 deg. F., would be very helpful in evaluating packaging materials.

Although numerous articles have described various types of equipment and conditions for determining moisture permeability (1, 2, 3, 6, 11, 13, 14, 15),[†] there is only one procedure, namely, the G.F.M.V.T. or "Southwick" method (12), which is designed for testing under the above conditions. Many laboratories have adopted the Southwick method because it gives reproducible results; however, this method requires the use of special equipment, and the size of the moisture chamber and test dishes limits the number of tests that can be run simultaneously.

Work at this laboratory on the development of moisture-proof coatings for paper, glassine, cellophane, etc., necessitated the adoption of a simple and convenient method for measuring the water-vapor transfer of these films under specified conditions. This was necessary since a Southwick chamber was not available here and the existing chambers were too busy to permit sufficient testing of our materials.

The method adopted involves sealing the film or paper to a Petri dish containing calcium chloride; placing the dish in a desiccator at 100 deg. F. over saturated potassium sulfate and determining the water-vapor transfer by the gain in weight of the test assembly. This technique employs equipment which is usually available in most chemical laboratories.

Description of test

I. Apparatus and Materials

- Oven, temperature control ± 1 deg. at 100 deg. F.
- Petri dishes, 3.5 in. diameter

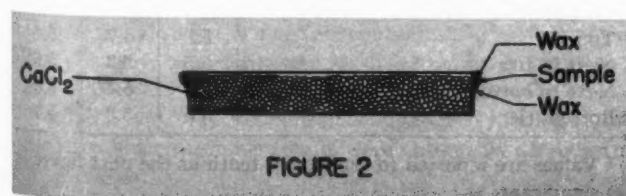
* The authors are of the Northern Regional Research Laboratory, Peoria, Ill., one of four regional research laboratories operated by the Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, U. S. Dept. of Agriculture.

[†] Numbers in parentheses refer to "Literature Cited" appended.

Wax seal is made between sample and outside edge of test dish by applying melted wax from end of warm knife.



Edge of sample is folded against wax seal on rim of dish.



- Desiccators, 10 in. in diameter and 7.5 in. in depth with four desiccator plates for each.¹
- Sealing wax.²
- Anhydrous calcium chloride—8 mesh.
- Saturated solution of potassium sulfate.
- Balance, accurate to 0.005 g.

II. Procedure

A piece of coated paper or film, 5 in. square, is cut from the sheet or roll. Approximately 55 grams of calcium chloride is placed in a Petri dish and the sample is centered over the vessel. A pad of clean paper is placed over the sample and the assembly is inverted and placed on a flat surface. A wax seal is made between the film and the outside edge of the test dish by application of melted wax from the end of a warm knife. (See Fig. 1.) Care must be taken to prevent the wax from becoming too hot because heat may damage the coating or film. The edge of the film or coated paper is trimmed with a scissors until a circular rim about one-fourth inch in width extends beyond the dish. This rim is carefully folded against the wax seal on the side of the dish and a second seal is applied over the edge of the rim as shown in Fig. 2. The second application of wax may be omitted when testing single-coated glassine, sulfite or kraft paper.

After sealing the samples to the test dishes, they are placed in a desiccator containing a solution of potassium sulfate saturated at 100 deg. F.³ Twelve dishes may be placed in one desiccator of the size specified if four tiers are made by separating desiccator plates with small wooden blocks. (See Fig. 3.) The samples are conditioned by placing the desiccator in an oven at 100 deg. F. for a period of 16 to 24 hours. At the end of this time the samples are transferred to a desiccator containing calcium chloride at room temperature. After four hours, each is weighed on a balance to the closest 0.01 g. They are returned to the desiccator containing the potassium sulfate solution and

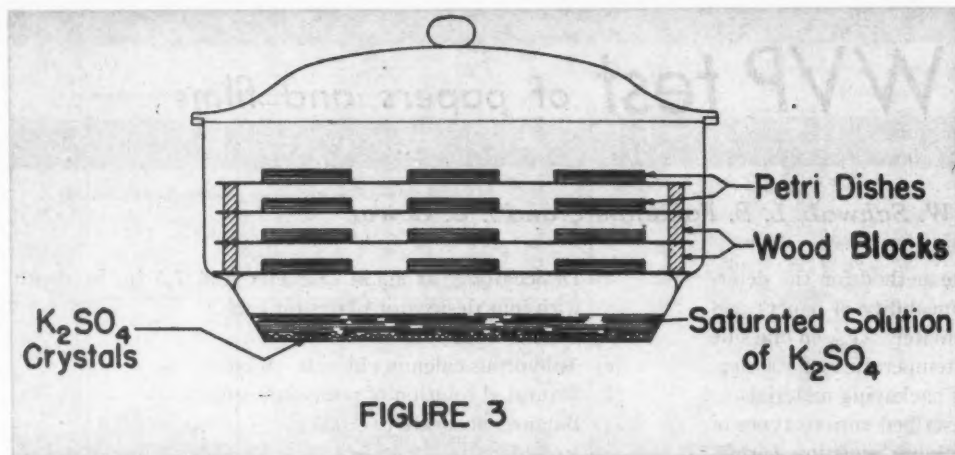
¹ Extra desiccator plates may be cut from rigid sheet material.

² Cenco Soft-Sealing Tackiwax was used.

³ This solution gives the desired relative humidity of approximately 95% over a wide range of temperatures (9).

TABLE I—WATER-VAPOR TRANSMISSION RATES OF VARIOUS PROTECTIVE FILMS

Material	Water-vapor transmission (grams/100 sq. in./24 hrs. at 100 deg. F. and a relative humidity of 95%)
Aluminum foil laminated to cellulose acetate	0.001–0.01
Laminated pliofilm	0.2 –0.3
Lead foil laminated to kraft paper with asphalt	0.15 –0.2
Moistureproof cellophane	0.6 –1.0
Glassine laminated to kraft paper with wax	1.7 –1.9



are kept at 100 deg. F. \pm 1 deg. F. for the test period of 68 hours. Control of temperature within narrow limits is necessary since small changes will influence the rate of transmission, especially at high humidities (5). The dishes are then transferred to the desiccator containing calcium chloride and are reweighed after four hours. The water-vapor permeability per 100 sq. in. in 24 hrs. is calculated using the following formula:

$$\text{Water-vapor permeability} = \frac{\text{Gain in weight in gram} \times 100}{\text{Number of days} \times \text{area of the dish in sq. in.}}$$

The water-vapor permeabilities of a few representative protective materials determined by the above procedure are shown in Table I.

Reproducibility of results

Studies were conducted to determine the reproducibility of results, the effect of the position of the Petri dish in the desiccator and the effect of induced air circulation in the desiccator.

The water-vapor transmission values for samples of three sets of coated materials, each having a different water-vapor transmission, were determined. Twelve samples of each set were run simultaneously in separate desiccators and at different positions in the desiccator. Table II lists the results. These establish the reproducibility of the test and show that the position of the test cell in the desiccator has no effect on the transmission value.

An additional test was run to compare ordinary diffusion with induced air circulation in the desiccator. A four-blade fan was mounted in one of the desiccators. Duplicate sets of samples were run simultaneously in this desiccator and in a control desiccator with no induced air circulation. The results, listed in Table III, show no significant difference. Thus, ordinary diffusion was adequate in maintaining a uniform humidity throughout the desiccator for these tests.

Further, a series of samples was tested at regular intervals of 20 hrs., after a 16-hr. conditioning period, in order to demonstrate that the materials reach equilibrium during the conditioning period and, in addition, to prove that the method is reproducible without introducing variations in the samples. The results of these tests are given in Table IV.

A close examination of the data in Tables II and III shows that the results for each set of materials vary between limits. This variation is not characteristic of our method, but occurs in all methods of determining the water-vapor transmission of sheet material. Oswin (10) reports that the transmission

values for any sheet material will follow a skewed distribution curve; the individual values being distributed about a mean. Such distribution is caused by lack of uniform thickness of coatings or films, by pinholes and by other imperfections always present in these materials.

Comparison with the Southwick method

Because our procedure was designed to operate under test conditions similar to those employed by the Southwick method, it was necessary to compare results obtained by each method. Accordingly, the water-vapor transmission of representative samples was determined by each procedure and the results are given in Table V. An examination of these results shows that our method gives values which are from 60 to 100% greater. This increase is probably caused by experimental differences inherent in the two methods, such as temperature and humidity, and by individual variations in the test samples. However, the important fact is that the order of the water-vapor permeability for the materials is the same for both methods. In the evaluation of any two or more packaging materials, a comparison must be made of values determined under identical test conditions because the water-vapor transmission is a relative quantity and no signifi-

TABLE II—DATA ON WATER-VAPOR TRANSMISSION (GRAMS/100 SQ. IN./24 HRS. AT 100 DEG. F. AND A RELATIVE HUMIDITY OF 95%*)

Position of sample in desiccator	Desiccator Number		
	I	II	III
<i>Laminated glassine coated with a moisture-proof Norelac composition (7)</i>			
Top tier	0.3	0.2	0.2
Next to top	0.2	0.2	0.2
Next to bottom	0.2	0.2	0.2
Bottom tier	0.2	0.2	0.2
<i>MST Cellophane 300A MST 54</i>			
Top tier	0.6	0.7	0.6
Next to top	0.6	0.6	0.6
Next to bottom	0.8	0.5	0.7
Bottom tier	0.6	0.5	0.6
<i>25-lb. glassine coated with Norelac (7)</i>			
Top tier	5.8	4.7	5.4
Next to top	5.5	5.3	5.6
Next to bottom	5.4	5.4	5.6
Bottom tier	5.5	5.6	5.3

* Values are reported to the closest tenth as the next figure is not significant.

TABLE III—EFFECT OF INDUCED CIRCULATION OF AIR IN THE DESICCATOR UPON RESULTS FOR WATER-VAPOR TRANSMISSION GRAMS/100 SQ. IN./24 HRS. AT 100 DEG. F. AND A RELATIVE HUMIDITY OF 95%)

Material	Control samples in ordinary desiccator			Samples in desiccator with induced air circulation		
Wax-laminated glassine coated with a moistureproof Norelac composition	Top layer	0.2	0.2	0.2	0.2	0.1
	Bottom layer	0.2	0.3	0.2	0.2	0.2
Norelac-coated glassine	Top layer	5.2	5.4	4.7	4.9	4.7
	Bottom layer	5.3	5.6	5.1	5.2	5.3

cance can be attached to individual values obtained by different procedures.

Discussion

The method described is not entirely new. It is essentially a combination of what we believe to be the best features of a number of previously published methods. The use of a solid desiccant within the test cell has several advantages over the reverse method. It permits the test cell to be inverted, thereby affording a simple means of sealing; it facilitates ease of transferring the Petri dishes from one desiccator to another and from desiccator to balance, and it allows the enclosed air space to be kept small, the importance of which has been emphasized by Carson (5). Edwards and Wray (8), in their procedure for testing the permeability of paint and varnish films, used Petri dishes as test cells and desiccators as the means of obtaining a constant humidity. Petri dishes make convenient test cells because they can be readily placed on the pans of an ordinary analytical balance and, in addition, give an adequate test area.

Our simple method of obtaining a moistureproof seal appears to be new; it effectively defines the test area and eliminates edge leakage. No specially constructed test dish or sealing apparatus is necessary. However, the use of a specially designed dish, similar to that described by Brabender (4), might reduce the time required for proper sealing.

The practice of exposing the samples to the test conditions for 16 to 24 hrs. and allowing to stand over calcium chloride for four hours before weighing, etc., was adopted from the Southwick method (12). This procedure allows the film to attain a steady state of moisture transfer, thereby eliminating any abnormal initial permeability possessed by a particular sample. This procedure also eliminates errors resulting from condensation of moisture on the test dishes and absorption of moisture by the wax, factors which are neglected in some methods.

The method of obtaining a constant humidity by means of solutions in desiccators is very convenient. Any humidity, at any specified temperature, may be obtained by choice of the correct solution. However, when desiccators are used to obtain a constant relative humidity, reliance is placed on diffusion to maintain the moisture content at the surface of the films. The rate at which water vapor is supplied to the atmosphere of the desiccator must be greater than the rate of loss through the film. This condition is apparently fulfilled in the desiccator, since the same results were obtained with or without air circulation.

As our procedure was designed for specific test conditions,

the directions are not suitable for samples having a high water-vapor transmission, as the desiccant becomes saturated and absorption of water-vapor stops. This difficulty can be overcome by one or a combination of the following alternatives: shortening the exposure period, lowering the temperature and reducing the humidity.

We feel that these data warrant the conclusion that this procedure will give satisfactory comparative values for the evaluation of package materials. This is not intended to imply that this procedure should be used in place of other methods or procedures which are recommended or required in any Government specifications.

Summary

A modified method for determining the water-vapor permeability of coated papers or films at 100 deg. F. and 95% relative humidity has been described. This method gives reproducible results and is readily adaptable to different experimental conditions.

Acknowledgment

The authors wish to express their appreciation to Milprint, Inc., Milwaukee, Wis., for determining the values in the Southwick chamber.

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TABLE IV—DATA ON CONTINUOUS TESTING OF SAMPLES AFTER 16-HR. CONDITIONING PERIOD

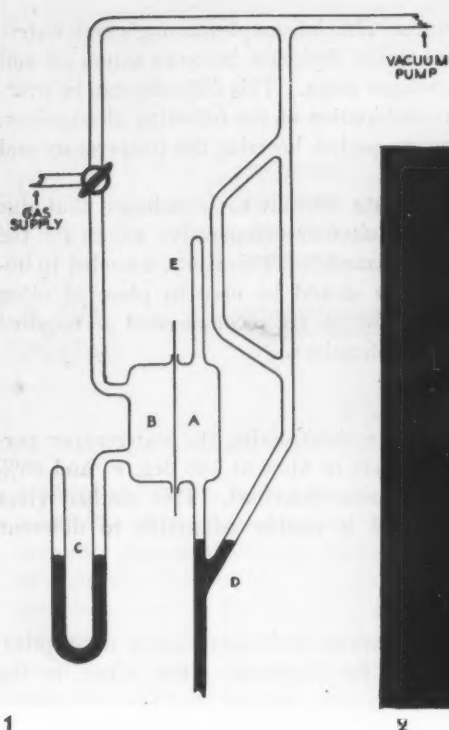
Material	Water-vapor transmission rate* for:			
	1st 20 hrs.	2nd 20 hrs.	3rd 20 hrs.	4th 20 hrs.
Opaque glassine coated with a Norelac-wax composition	1.1	1.1	1.0	1.0
Wax-laminated glassine	0.5	0.5	0.4	0.4
Glassine coated with Norelac	5.2	5.6	5.2	5.3
Aluminum foil	0.001	0.001	0.01	0.001

* Grams/100 sq. in./24 hrs. at 100 deg. F. and a relative humidity of 95%.

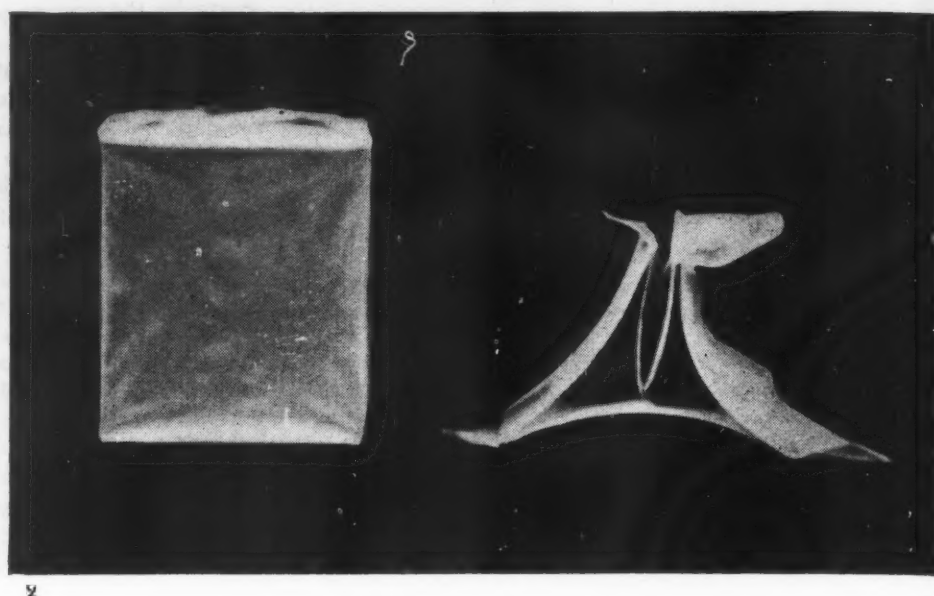
TABLE V—COMPARISON OF WATER-VAPOR TRANSMISSION RATES:* SOUTHWICK METHOD AND MODIFIED DESICCATOR PROCEDURE

Material	Desiccator procedure	Southwick
Wax-laminated glassine coated with a moistureproof Norelac composition	0.2	0.11
Norelac-coated glassine	5.1	3.10
Norelac-laminated glassine and coated on one side with Norelac	0.8	0.45
Norelac-laminated MAST-No. 84 cellophane	1.0	0.60

* Results are an average of at least 6 individual runs. Units—grams/100 sq. in./24 hrs. at 100 deg. F. and relative humidity of 95%.



1—Apparatus for gas permeability measurements. 2—Comparison of package freshly filled with carbon dioxide (left) and package after standing several days.



Vacuum pack with flexible cellulose material¹

by A. H. Woodcock²

The need for non-metallic food containers having low water-vapor permeability has been discussed in an earlier publication (10).³ Valuable constituents of many food-stuffs—carotene (4), ascorbic acid (1), butter fat (5), and other fats—are believed to be susceptible to deterioration in the presence of oxygen and to require protection from it. Complete protection can be obtained only by the use of packages made of material impermeable to oxygen and hermetically sealed. For this purpose, tinplate is one of the most suitable materials. The present shortages of materials and cost considerations have focused attention on non-metallic films with low oxygen permeability.

¹ Reprinted by permission from the *Canadian Journal of Research* (23, 117-122), March '45. Contribution from the Division of Applied Biology, National Research Labs., Ottawa. Issued as Paper No. 125 of the Canadian Committee on Food Preservation and as National Research Council of Canada reprint No. 1263.

² Formerly biophysicist, Food Investigations; now research chemist E. S. & A. Robinson (Canada), Ltd., Toronto.

³ Numbers in parentheses refer to references appended to this article.

ABSTRACT

Films of wax-coated laminated cellophane have been shown to transmit carbon dioxide 25 times as rapidly as they transmit oxygen. Packages made from this film and gas-packed with carbon dioxide produce a vacuum pack on standing. Factory trials indicated that this type of packaging is feasible commercially and shipping trials have shown it to be reasonably substantial. Storage trials at 26.7 deg. and 37.8 deg. C. showed the package to be effective for a period of six months.

While the previous paper in this series was confined to a study of the effectiveness of non-metallic containers as water-vapor barriers, it was possible to utilize some of this information in the development of a package having both low water-vapor permeability and low oxygen permeability.

The present paper describes a non-metallic food container with low oxygen permeability believed suitable for packaging dried whole milk powders and other powdered products subject to oxidative deterioration.

Experimental

The apparatus used to measure the oxygen permeability of these films was similar to one described elsewhere (6) and is shown in Fig. 1. The film was placed between two hemispherical cups *A* and *B*. Both sides of the film were evacuated and the cup *B* was filled with gas at a few centimetres' pressure as measured by the manometer *C*. The vacuum pump was shut off from *A* by raising the mercury level above the point *D*, and gas diffused into *A* from *B* through the film. At regular periods the amount of gas in *A* was determined by raising the mercury level and compressing it into the calibrated tube *E*, where its volume and pressure were measured in a manner similar to that used with a McLeod gauge. Compensation for pressure of volatile vapors, which reached saturation under compression, was made by taking a series of readings at different volumes. Measurements at 24-hr. intervals permitted calculation of the permeability in absolute units.

Following development of a film with low oxygen permeability, packages were fabricated, filled with milk powder, sealed and gas-packed. Some of these were subjected to shipping trials, some to rough treatment at low temperatures, and others were put into storage at 26.7 deg and 37.8 deg. C. (80 deg. and 100 deg. F.).

The storage experiment was designed to compare the quality of dried whole milk powder packed in air and packed in inert atmospheres using the current commercial method and these non-metallic containers. One-pound tins were used for the commercial pack while 8-oz. and 20-lb. packages were used for the non-metallic gas-packs. Milk powder quality was determined at three-month intervals by tasting tests (7).

Results

Description of film developed. After several unsuccessful trials a film with low oxygen permeability was designed. This film consisted of two layers of 450 M.S.Y.T. cellophane laminated together with lacquer and coated on one side with a flexible wax compound (40 lbs. per ream of 500 sheets 24 by 36 in.). The water-vapor permeability of this film when formed into a liner was found to be about one-eighth of that of the film used for the dried egg package (10).

Oxygen and carbon dioxide permeability of the film. The oxygen and carbon dioxide permeability of this film as prepared is shown in Table I. After tests had been repeated several times on a sample of film, the permeability appeared to decrease; this change was believed to be due to the partial dehydration of the film when subjected to repeated evacuation. Drying a sample by subjecting it to vacuum at room temperature confirmed this (Table I). Furthermore, the

TABLE I—OXYGEN AND CARBON DIOXIDE PERMEABILITY OF LAMINATED 450 M.S.Y.T. CELLOPHANE, COATED ON ONE SIDE WITH A FLEXIBLE WAX COMPOUND

Condition of film	Penetration in ml. per sq. metre per 24 hrs. per mm. pressure difference		
	Oxygen	Carbon dioxide	Ratio
As received	0.0075	0.186	24.8
Dried under vacuum	0.0036	0.091	25.2

ratio of permeability to oxygen and carbon dioxide was proportional, within the limits of experimental error, to the ratio of their solubilities in water at room temperature, i.e., 1:27, indicating that the cellophane, which contains moisture, is the effective part of the film rather than the heat-sealing lacquer, laminating compound or the wax coating. This had been observed previously for regenerated cellulose films (9); however, for films such as Pliofilm, the ratio of permeabilities is believed to be about 1:4 (2).

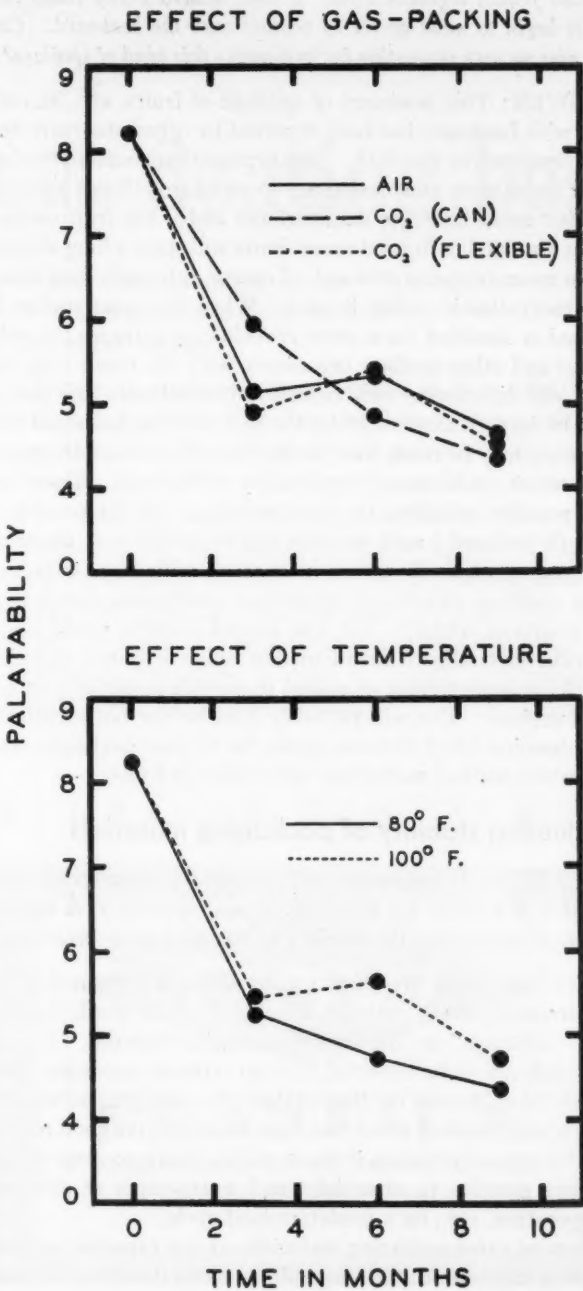
Based on the values reported in Table I, a cubic package with 6-in. sides would transmit 60 ml. of oxygen per annum. Since this package should contain about 2,500 gm. of milk powder, the amount of oxygen transmitted would be below the critical level associated with rapid fat deterioration in milk powders (5), if uniformly distributed through the contents. Should it react with the surface layer of milk, rancidity might occur and the storage investigation was planned to compare the effectiveness of this method of gas-packing milk powders with the method currently in industrial use.

Packages of low oxygen permeability. When a package prepared from this film is filled with carbon dioxide the partial pressure differential across the film is approximately 758 mm. of mercury since the partial pressure of carbon dioxide under normal atmospheric conditions is 2.28 mm. of mercury. It follows from Dalton's law that the carbon dioxide will be lost from the package more rapidly than it can enter (3), and, since the diffusion rate of oxygen (Table I) in the reverse direction is much less, a partial vacuum is created. This was demonstrated by forming a pouch-type liner bag of this wax-

coated laminated material over a paperboard frame and sealing. The packages were filled with carbon dioxide through a small hole (brogue hole), by evacuating in a chamber and replacing the air with carbon dioxide; the brogue hole was sealed with a drop of melted wax. On standing, carbon dioxide escaped and the bag collapsed as shown in Fig. 2. Calculations based on the results of Table I indicate that carbon dioxide would be lost at an initial rate of 14.1 cu. mm. per sq. cm. per day.

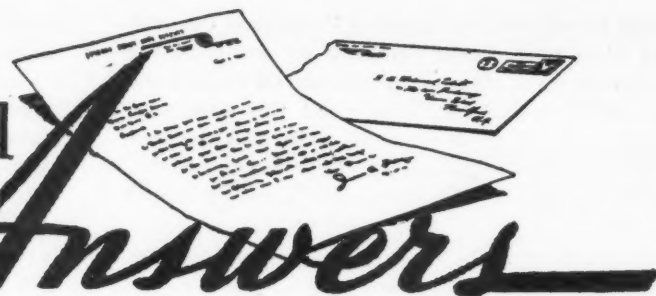
A foodstuff packed in this manner was essentially vacuum-packed, since the carbon dioxide diffused in the atmosphere or was sorbed by the milk powder (8). Successful packs were therefore compressed into a firm block by atmospheric pressure and remained firm as long as the vacuum was maintained. A damaged package (Continued on page 174)

3—Effects of method of packing (average for both temperatures) and temperature (average for all methods of packaging) on the palatability of stored milk powder.



QUESTIONS and

Answers



This consultation service on packaging subjects is at your command. Simply address your questions to Technical Editor, Modern Packaging, 122 East 42nd St., New York 17, N. Y. Your name or other identification will not appear with any published answer.

Relation of boxboard to fruit spoilage

QUESTION: *I have been doing experimental work in connection with the use of paperboard cartons for the packaging of various fruits, vegetables, etc. I have noticed many times that fruits begin to mold or rot in contact with the boxboard. Can you give me any suggestion for preventing this kind of spoilage?*

ANSWER: This tendency of spoilage of fruits, etc., in contact with boxboard has been reported by other observers and experimenters in this field. The explanation seems to be that most fruits have some resistance to mold growth and spoilage in their outer layers or skin surfaces and if the fruit surface is not abraded or injured many fruits will show a long storage life at room temperatures and, of course, extremely long times of preservation if cooling is used. When the outer surface is rubbed or abraded these areas provide easy entrance for mold spores and other spoilage organisms, with the result that the fruit will deteriorate very rapidly. Furthermore this action may be further accelerated by the fact that the boxboard you are using may be made from re-used paper and contain organisms which could cause deterioration of the fruit. There are two possible solutions to your problem: (1) To provide a smooth surfaced board or cover the fruit with soft tissue at the points where it comes in contact with the boxboard. This would be an attempt to prevent mechanical abrasion at the points of contact. (2) The second solution would be to provide the boxboard with a surface which is smooth and also which has been treated or coated to provide a sterile or fungicidal surface. You will probably have to try both methods to determine which is more applicable to your packaging and find which method works best with different fruits.

Evaluating stability of packaging materials

QUESTION: *In connection with certain requirements we shall be asked to meet we are interested in your opinion as to various means of evaluating the stability of the packaging materials.*

ANSWER: There are a great many ways of interpreting the requirements which could be demanded by the words "stability," "shelf age" or "life" of the packaging material. If your materials are to be expected to meet outdoor exposures they should be evaluated for their stability to sunlight, water, etc. The testing method which has been found to give good results for this type of exposure is the so-called weatherometer which exposes samples to ultraviolet and water-vapor at elevated temperature, etc., on a predetermined cycle.

In most cases packaging materials are not expected to meet outdoor exposure conditions and the usual deteriorating factors are temperature and air exposure. These two factors can

produce degeneration either alone or together so that packaging materials will show greatly reduced physical properties as well as reductions in greaseproofness, water-vapor permeability and other important functions.

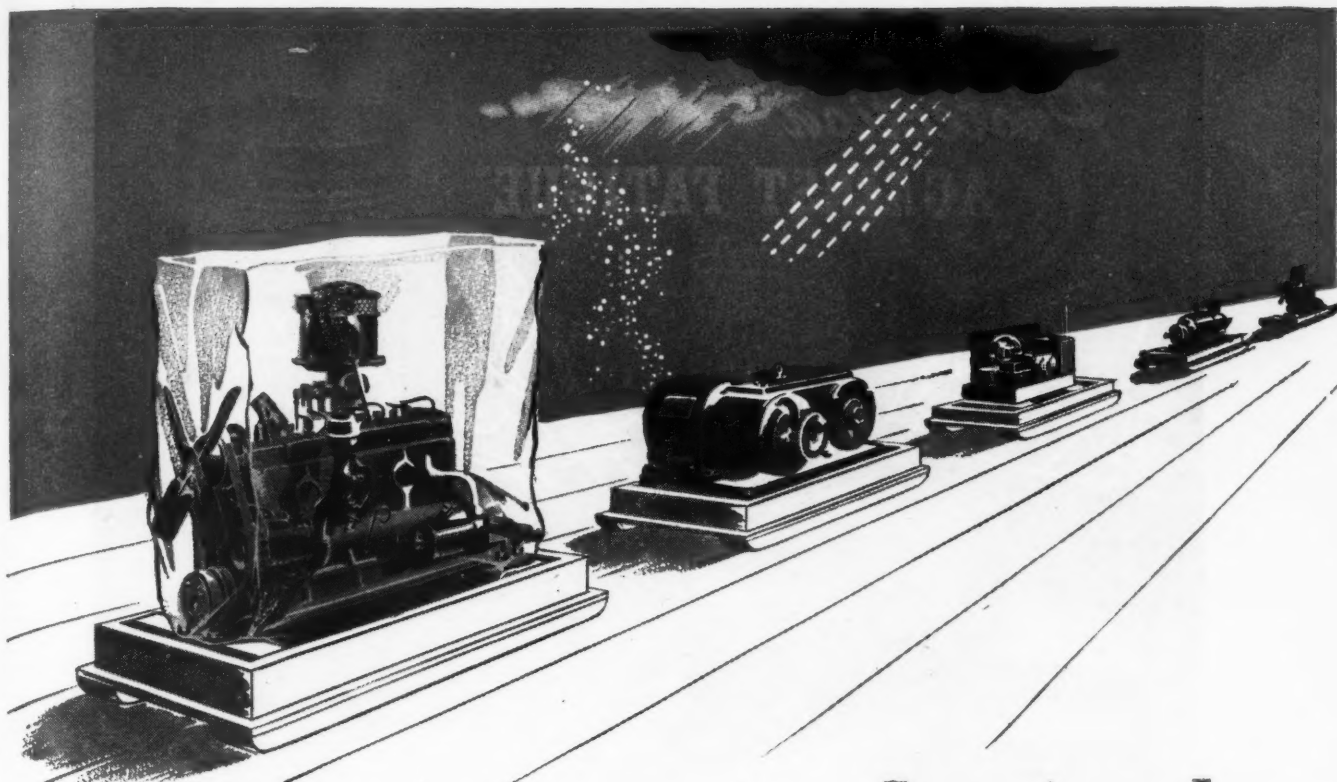
The best means of evaluating the material under these conditions is to place it at a given temperature and humidity for a period of time and to compare the test results taken before and after such exposure. A very good example of this type of stability test is contained in Army-Navy Aeronautical specification AN-B-20, copy of which can be obtained from the District Supervisor, A.A.F. Matériel Command, Central Procurement District, W. Warren Ave. and Lonyo St., Detroit 32, Michigan. Attn.: Engineering Data Branch, Production Division.

It may be that you are interested in evaluating your materials for their stability under different conditions of temperature, humidity or under some other special conditions. If so, you may find either of the methods suggested as a useful guide for developing a suitable test.

Effects of plasticizer on cellulose acetate

QUESTION: *Our laboratory work on cellulose acetate for a particular application has shown an appreciable and varying loss of weight with time on most of the acetate samples we have examined. Can you suggest why this should occur and how we could obtain materials with the minimum weight loss after prolonged exposure at 150 deg. F and low humidity?*

ANSWER: From your question it would appear that you have obtained a large number of commercial cellulose acetate sheets which you have exposed for long periods of time to test conditions at 150 deg. F in low humidity; and under these conditions have noticed weight loss which is excessive for the end use you have in mind. This weight loss is mainly due to two factors: One, loss of moisture in the form of watervapor and, secondly, the loss of plasticizer. The amount of loss is primarily dependent upon the quantity and kind of plasticizer which is used in the acetate sheeting. Each of the different plasticizers or plasticizer mixtures will have different vapor pressures and different characteristics for carrying moisture. You can readily see the possibilities for large losses if certain plasticizers were present in large quantities. This loss can be kept to a minimum if you specify your conditions of testing and request from the manufacturers or suppliers of acetate sheeting material samples with the least amount of plasticizer which satisfies your mechanical or handling requirements. You should further request that they supply you with a variety of different plasticizers at low levels so that you may determine which sample best fulfills all of your conditions.



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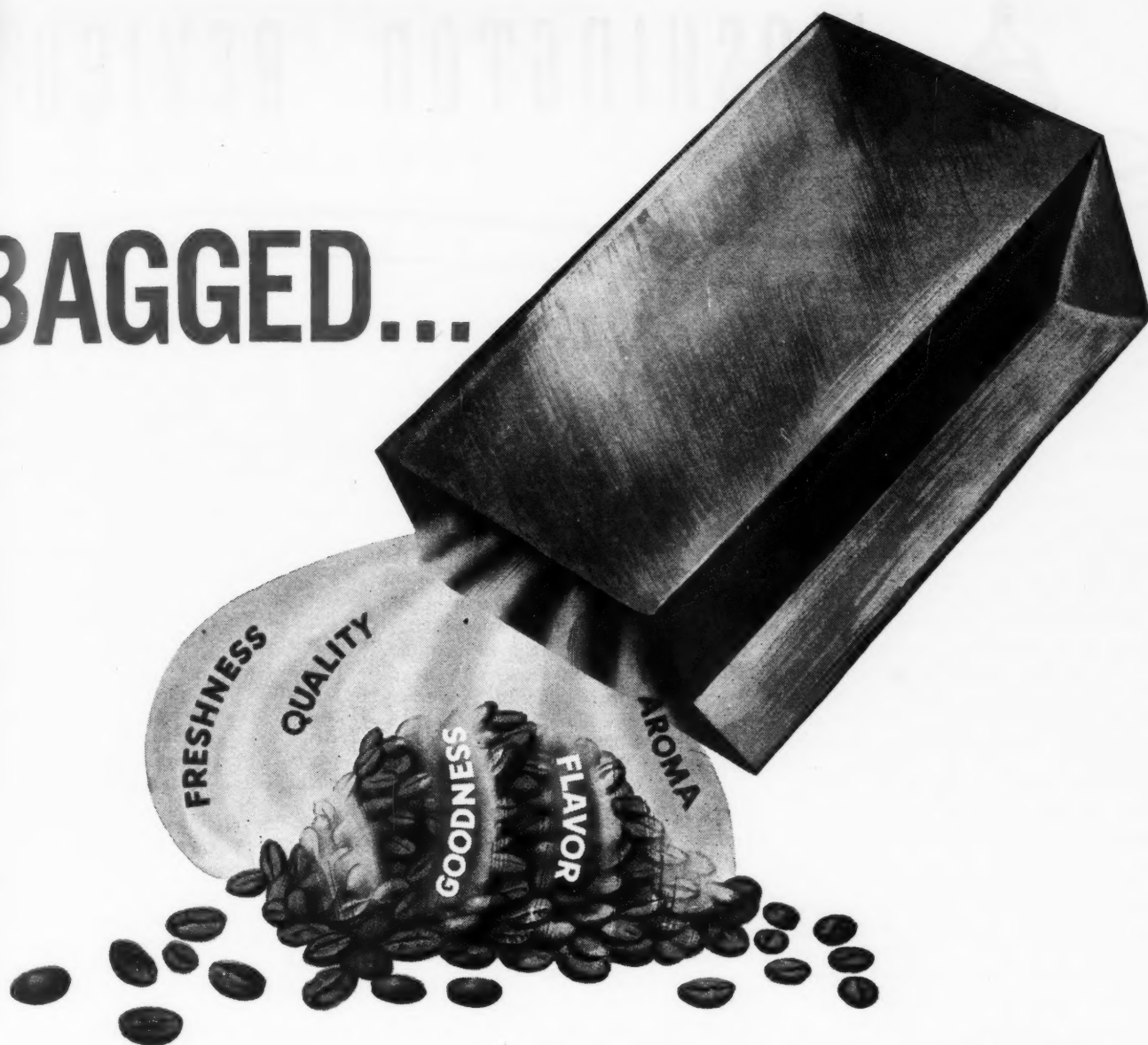
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WASHINGTON REVIEW

R. L. Van Boskirk, Washington Editor

● **Paper Prospects**—Several factors afford the prospect of an improvement in the pulp and paper situation, not an improvement by leaps and bounds, but a slight easing of what has become the No. 1 shortage, certainly as far as packaging is concerned. One factor is a decrease in the requirements for pulp for nitration; another is the prospect of increased imports from Canada and a third is the possibility of imports from abroad. As this is written, a trickle of imports has started which may soon swell to a sizable stream.

WPB, however, is discounting the latter factor in its allocations for the third and fourth quarters, preferring to wait until those imports actually materialize in appreciable quantity before including any import figure in its planning. Even so, in its monthly statistical summary the American Paper & Pulp Assn. predicts that 118,000 tons more pulp will be available for paper making than in the second quarter.

All sources agree that relief for our tight pulp situation *could* come from Scandinavian imports, but the more cautious prognosticators prefer to wait and see what happens. The year 1937 marked Sweden's greatest production of pulp. That year she produced 3,883,901 tons, exported 2,813,616 tons, of which 1,084,634 tons came to the United States.

If anything like normal conditions are restored, say some Government officials, it should be possible for Sweden to send us at least 1,000,000 tons between now and July 1, 1946. More conservative figures cut this to 600,000 tons, but even that figure would mean 50,000 tons per month—a considerable help.

Transportation, however, is a major problem—or has been up to recently. Now comes the announcement from the War Shipping Administration fixing freight rates on wood pulp shipments from Sweden and stating (June 16) that bottoms are ready to start bringing Swedish pulp to the United States. The new basic freight rate is \$8.00 per long ton of 2,240 pounds as compared with a former figure of \$12.00. This former rate was practically prohibitive as it would have landed Swedish pulp above the OPA ceiling.

Meanwhile, England has been receiving Swedish pulp. In the same year that Sweden sent us 1,084,634 tons of pulp, she sent England 650,242 tons (these statistics are from "Wood Pulp Statistics,

1944" United States Pulp Producers Assn.) and England has experienced just as critical a paper shortage as we have, so there is just as great a dammed up demand there. Other conditions favor Great Britain, too—for one thing, Sweden is experiencing a definite shortage of coal which England is in a position to relieve.

Latin America offers another market for Sweden's pulp, now that the sea lanes are open. During the war emergency, the United States and Canada, carrying out the "good neighbor policy" increased pulp shipments to Latin America from 20,000 tons in 1939 to more than 125,000 tons. When Swedish commerce with South American countries is restored—not long hence—the price and transportation situation would indicate that this 125,000 or more tons could be diverted to American civilian paper needs and afford just that much additional relief for a situation that will not be entirely normal for some time. Summing the situation up, the conclusion reached by the American Paper & Pulp Assn. is: "Assuming no imports from Scandinavia and assuming that the pulp-to-paper ration will be no better than in 1940 (when 100 lbs. of wood-pulp consumed made 147 lbs. of paper and paperboard) paper and paperboard should increase by at least 57,000 tons a month in the third quarter. Domestic pulp producers may also be able to increase production because of a possible improvement in the labor situation. Given an increased pulp supply sufficient to operate at capacity, the paper and paperboard mills can produce from 19 to 19½ million tons annually."

● **Easing to Come Slightly**—Meanwhile, there are other indications of slight—but only slight—relaxations in related fields. For example, publishers and printers will not find it quite so difficult to get paper for books, magazines and commercial printing, as a result of minor increases in supplies of certain types of paper not required to produce military items. In making known the details of this relaxation, WPB emphasized the "extremely critical over-all paper shortages," but said that increased quantities of "white pulps" will permit a greater output of paper by mills that cannot manufacture V-boxes, ammunition containers, multi-wall shipping sacks, waterproof paper and other similar military items urgently

needed for food and material shipments to the Pacific. While shortages of military items made from kraft or brown wood-pulp are more acute than ever, WPB has said that all paper users "will be permitted hereafter to increase their paper consumption in proportion to increased supplies of any types of paper that may become available for civilian use."

● **Waste-Paper Gathering Facilitated**—In order to provide as large a supply of raw material from waste paper as possible, OPA has been going over its various regulations and directives with a view to simplification—and with results. A substantial reduction has been made in the paper work that has been required of all shippers of commercially packed waste paper and an increased flow of this commodity to paperboard makers is expected.

● **Ceilings Upped on Groundwood Papers**—Maintenance of production of the lowest-priced items in groundwood specialty papers is the aim of OPA's action increasing manufacturers ceiling prices on two grades of groundwood poster and one grade each of groundwood hanging paper and railroad manila.

● **Surplus Containers Not Under Order**—Users who are able to acquire fibre shipping containers from Surplus Property Disposal Board (when it has them) are not subject to the controls of Order L-317 restricting manufacture, delivery and acceptance of such containers, WPB has ruled. However, the number of such containers moving into the market through the Board will be negligible for months. The relaxation does not apply to V-boxes or W-boxes, even should the Board acquire them for disposal.

● **Quota Restrictions Broadened**—Food packers and shippers will benefit somewhat by WPB action in making the quotas on the use of new fibre shipping containers for food products interchangeable for all foods, with a few exceptions. The exceptions are such, however, that the easing of the restrictions will not be reflected too widely. Exceptions include meat and meat products, fishery products, dairy products, poultry, eggs, and unprocessed, canned or frozen fresh foods.

● **"Incentive Authorizations"**—Because of manpower, plant capacity and other



“Run, Maw, I’m only loaded fer squirrel!”

There are times, though, when singleness of purpose has its points. Take us. Crown does just one thing—makes cans. We have no other interests. All our forces—mental, financial and mechanical—are devoted to the production of high quality cans. That’s why they *are* good. The same goes for Crown service. It’s personalized, it’s efficient, and it’s complete . . . In this concentration of effort lie distinct and profitable advantages to every can user. That means you.

CROWN CAN

INDEPENDENT AND HELPFUL

CROWN CAN COMPANY • NEW YORK • PHILADELPHIA • Division of Crown Cork and Seal Company, Baltimore, Maryland

AUGUST • 1945

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problems besetting fibre container makers, it is problematical whether the "Incentive authorizations" announced by WPB will result in increased production of shipping containers for military and essential civilian uses. Under the new plan, manufacturers now receiving "basic authorizations" that permit acceptance of a specific amount of containerboard are to be granted an "incentive authorization" on a monthly basis, to use additional tonnage to produce more fibre shipping containers. Application must be made to WPB in writing.

● **Above-Ceiling Sales Curtailed**—OPA officials believe they have halted at least some of the sales at above ceiling prices at which they said a "minority" of producers of paperboard shipping containers, cartons, drums and pails were selling previous to the tightening last month of the regulations on the reporting and computing of ceilings. Under the revised regulation, each manufacturer must continue to use the same formula method of computing his ceiling prices that he used in October 1941 and filed with OPA and in addition must file with OPA an October 1941 sample of the application of his price ceiling formula. Where records have been altered, removed or destroyed, or are inadequate, OPA may establish a pricing formula in line with other formulae in use by the industry.

● **Premium Price for Shade Cloth**—Manufacturers of moisture-proof wrapping material for the military who use window-shade cloth as a base for their product are now, or will be when they rebuy new supplies of the cloth, paying premium prices for it, under an OPA amendment to the cotton cloth regulation. The amendment permits charging of the premium price even when allocated on an emergency basis.

● **Stationery Restrictions Out**—Another signpost pointing a trend in the direction of a return to "normalcy," is the lifting by WPB of restrictions limiting the size of paper stationery and prohibiting use of metal closures on commercial envelope flaps already supplied with adhesive seals. Even more important is the reason given by WPB officials for eliminating the restrictions: Increasing supplies of steel for dies and mechanical closures make them unnecessary. Both restrictions were in Schedules to Order L-120.

● **Increased Asphalt-Paper Supply Seen**—Cutbacks by the military are expected to release several thousands of tons of asphalt laminated paper for shipping sacks for civilian use, paper authorities here believe, opining at the same time that total overall production will have to be increased also, in order to fill the increased allocations for the current quarter (about 18,000 tons over any previous authorizations) and for anticipated equally large allocations in the fourth quarter. (WPB

last month gave asphalt and creping paper and shipping sack paper a preferred production status because of critical war and essential civilian needs.)

● **Blackplate Order Protested**—Producers of paints and kindred products using blackplate ends or all blackplate containers are awaiting action by WPB on the protest by the Paint, Varnish and Lacquer Industry Advisory Committee against the amendment of Order M-81 which requires producers to charge blackplate ends for fibre body or terneplate body containers against the 60% quotas, while cans produced of all blackplate need not be charged against such quotas. The action, they said, penalizes users of fibre and terneplate body cans.

Manufacturers of paste water paints, including resin emulsions, may use 100% of their 1941 usage of tin-plate or terneplate cans, instead of 60% as formerly allowed to them and still allowed other producers under a new WPB ruling.

The tin situation probably will remain tight, since available supplies still are some 70% under early 1942. Effects of post-VE Day cancellations have been minor and indications are that total requirements will be above last year.

● **About Cordage Fibres**—No relief is in sight for some months in the field of cordage fibres. However, if shipping space is made available, the Philippines, through representatives in Washington, promise to be sending cordage fibres in large quantities to this country in six months. WPB officials point out that current quarter requirements for both manila and sisal rope are far ahead of potential supply and that the situation is likely to continue to the year's end. Production of jute and istle rope appears to be equal to stated requirements, so WPB has discontinued scheduled distribution of these ropes. Also, of interest to the cotton industry, WPB has removed restrictions on use of jute butts or cuttings (used in bale coverings and some ropes) and has slightly increased the amount of agave fibre permitted to be used (from 583% of basic monthly poundages to 614%).

Beginnings of a U. S. hemp industry on its own feet are seen in the announcement that a group of farmers and business men at Union Grove, Wis., have taken over the hemp processing plant established by the government and operated by a government corporation until August 15. One of 42 such plants set up by the government after overseas supplies were cut off, the Union Grove plant is equipped to process the crop from several thousand acres.

● **Container Shortage Retards Impact of Reconversion on Public**—Increased production of many consumer goods on which restrictions have been or may soon be lifted is expected to be slow in reaching the public because of a number of "bottle-necks," one of the most important of which is the problem of finding containers.

Increased production of carpet sweepers, for instance, is expected in the fourth quarter, but the shortage of adequate containers may slow their progress to retail markets. The aluminum industry is in a position to respond quickly when restrictions are lifted on cooking utensils and other consumer articles made of aluminum, but lack of containers and car space for shipping, among other things, may keep them from reaching the public for from three to six months, according to industry spokesmen. Manufacturers of wood office chairs expect to increase production, but have told WPB that shipping containers constitute one of their major problems. The same is true of production of vitrified chinaware, bicycles, and many other consumer goods requiring shipping containers. Best assurance WPB has been able to give is that containers may again become more plentiful after transshipment from Europe to the Pacific is accomplished.

● **Box Veneer Producers Have IAC**—A new WPB Industry Advisory Committee for the Independent Box Veneer Producers industry has been formed.

● **Fluid Milk Containers**—Makers of fluid milk containers will not face the same problems they have been facing as a result of WPB's order removing the restrictions on the manufacture of such containers and their covers by specifications and steel content. They were removed by revocation of Order M-200.

● **Critical List**—Latest list of critical materials and products submitted to WPB by the Joint Committee on Critical Materials and Products (those which are now or are expected to be in short supply and which threaten to limit production of essential products or the fulfillment of programs of high urgency) includes: Textile bags, cloth-backed metal moisture-vapor barriers, nailed wooden boxes, burlap, cans, glass containers and metal and molded closures, wood veneer containers, slack cooperage, all types of cordage, compressed gas cylinders, steel pails and steel and fibre drums, containerboard and containers, waterproof asphalt laminated paper, pulpwood, plywood, multi-wall shipping sacks, steel strapping, waterproof tape, tin, and waxes.

● **Lead Collapsible Tube Order Rewritten**—Establishment of new lead quotas for manufacturers of collapsible tubes is expected to increase the quantity of such tubes available for packaging of civilian products. Under the quota system, some 4,000 lbs. of such tubes will be used during the current quarter. Distribution of tubes is being worked out between producers and distributors without direction from WPB, except for military and medicinal purposes.

Cutbacks in Army contracts have made lead available for several million additional tubes late this year.



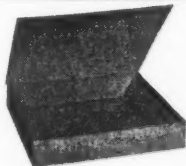
Eye-Catching!

YES...IT'S A WARNERCRAFT PACKAGE THAT CAUGHT HER EYE!

Products which promise beauty should have about them an aura of beauty . . . for they create a dream in women's minds of long sought after perfection. This intriguing, eye-pleasing appearance is a further stimulus to a woman's buying urge. The pretty box, the delicate container, the enchanting package which she can visualize gracing her dressing-table . . . will most often be the one she places there.

WARNERCRAFTSMEN have long used in their designing for the cosmetic industry, the formula of Fact, Fantasy and Fabrication . . . a sense of reality, a coating of Fairyland, and a sound, strong construction of proven workmanship that can stand up under any unusual shipping condition.

Consult with WARNER BROTHERS now and let them plan and develop with you the post-war package that will be a thing of beauty . . . a promise of sales.



Warnercraft Tekwood* is one of the many new packaging improvements developed by Warnercraftsmen for post-war use. Light in weight as cardboard, yet many times as strong, it is adaptable to any type of covering. It is especially suitable for boxes intended for re-use.

*REG. U. S. PAT. OFF.

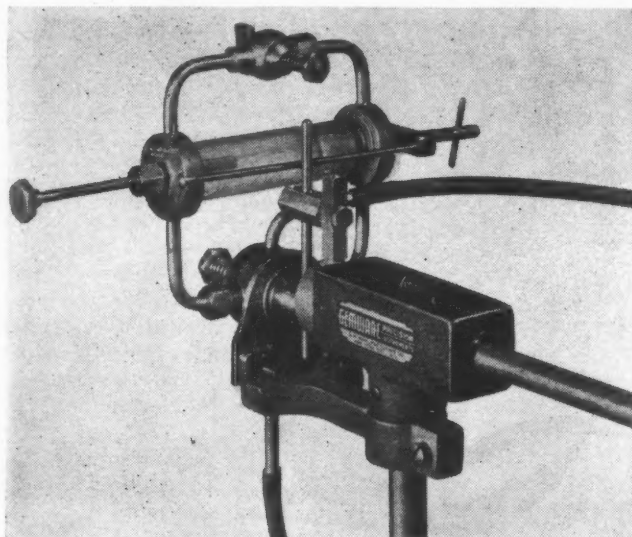
WARNERCRAFT
 "THE FINEST WORD IN PACKAGING"

Makers of set-up and folding boxes of all types, transparent acetate containers, hand made specialties, counter displays and dispensers.
THE WARNER BROTHERS COMPANY
 Main Office and Factory: 325 Lafayette Street, Bridgeport, Conn.
 New York Sales Office: 200 Madison Avenue, New York, N. Y.

Equipment and Materials

ASEPTIC FILLER NOW AVAILABLE

This aseptic filling machine has been in use in one of the largest pharmaceutical laboratories as standard equipment in its filling department for over ten years. Recently it has been made available by the G. M. Manufacturing Co., New York City, to those



who have a need for aseptic production filling equipment in 5-cc., 25-cc., 60-cc. and 100-cc. capacities. The machine may be adjusted for any desired capacity from 2 cc. up to 100 cc. Trade-marked Gemware, the filler is made of pure nickel to insure non-contamination of the product being filled. It is foot-treadle operated. While it operates by gravity feed, air pressure may be used when so desired. The four-way valve in the filling head is operated by the shaft connected to the machine pulley and foot treadle. A quarter turn of the valve both fills and empties the glass cylinder. The machine is easily sterilized as a complete unit simply by loosening up the tie-rods to eliminate strain on the glass cylinder during autoclaving.

LABEL VARNISH

Eimer & Amend of New York City has developed a new transparent, watertight and waterproof varnish which, when spread over the surface of any label, not only makes the label tough, flexible and waterproof but highly resistant to acids and most strong chemicals. A solution of polystyrene plastic, the varnish dries in about five minutes to a transparent film.

ENDLESS FOIL TUBING

Clarvan Corp., Milwaukee, Wis., announces its new endless foil tubing designed to meet method 1A and 2 packaging requirements.



The tubing consists of standard cloth or paper-backed foil, ready cut to widths ranging from 4 to 16 in. The edges of the foil are machine welded to form a tube, which is then wound on a reel and the whole packed in a fibre drum. In use, the reel is mounted on a suitable rack, the tubing unrolled, cut to the desired length and the ends heat sealed to form the complete pouch. The manufacturer claims several advan-

tages for his tubing: Packed in cylindrical drums, the tubing takes up only a small portion of the space normally required to store an equal quantity of ordinary pouches; because the tubing is adjustable in length and available in a variety of widths, it reduces the problem of inventory control and, finally, there is almost no limit to the flexibility of its use.

GUMMED TAPE AID

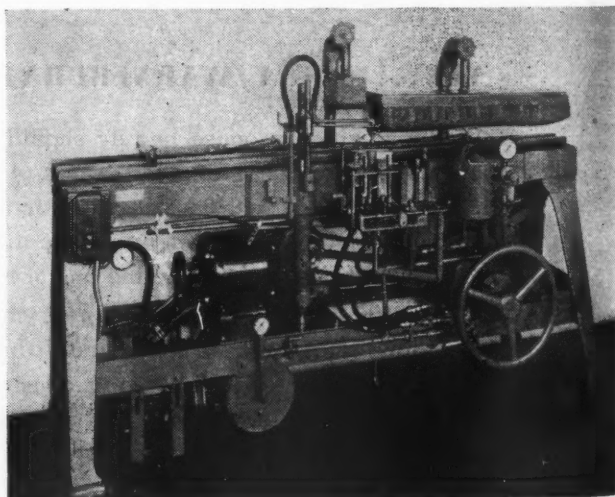
A combination of active chemicals called Stik-Gum has been developed by Service Industries of Philadelphia which is said to create an adhesive weld of tape to paper stronger than the tape or paper itself. The product, when mixed with water, is supposed to eliminate curling and make gummed tape take hold faster and stick better by vitalizing the gripping power of the glue. It is packaged 24 paper tubes to the box, each tube being sufficient to process one gallon of water. The manufacturer reports that in actual use the product has speeded packaging by as much as 100 more packages per day, effecting savings of 25% in the actual amount of tape used.

PACKING LIST SHIELDS

Weatherproof fiberboard packing list protectors are now available for general industrial orders from the Rogers Corp., Manchester, Conn. Previously used on overseas shipments containing more than one kind of equipment, they are now available in two sizes—5 in. by 5³/₄ in. and 5⁷/₈ in. by 7 in.

NEWS IN GLASS LABELER

Horne-Ash Machinery Co., Inc., San Francisco, is offering for sale the new Vac Spray Labeler, a product of the Vac Spray Machinery Co. According to Horne-Ash, the outstanding feature of this labeler is its full adjustability, not necessitating the purchase



of any extra parts and capable of full extension from a one-ounce package to about a gallon size. It is adaptable to labels from the size of a postage stamp to the size of a post card. Changes from one size to another take from three to five minutes making the unit particularly suitable for jobs requiring frequent changes, without undue loss of time. Speeds are up to 40 per minute. The labeler will handle oval, square, triangle, oblong or special die cut labels for flat, panel, round, square or triangular containers. The labels may be foil, varnished, lithographed, embossed—gummed-back or plain.

PAPER COST SCALE

The Paper Markets Development Service, 12 South 12th St. Philadelphia, Pa., has developed (Continued on page 178)

CONSULT

CLARVAN

Whatever your packaging problem Consult Clarvan first! Our specialized experience and skill with all types of flexible packaging materials is at your disposal.

Convertors and designers of protective packaging

CLARVAN MILWAUKEE
PITTSBURGH
CHICAGO

Plants and People



K. E. Prindle

Karl E. Prindle has been appointed vice-president in charge of product development by the board of directors of the **Dobeckmun Co.**, Cleveland. He heads up a staff which has been very active in creating new types of packaging, electrical insulation and other technical specialties required for military use. These include laminated cellophane for Ration K bag liners and parts packaging and laminated aluminum foil for instant coffee, dehydrated fruit juices and bouillon in field and emergency rations.

The **Reynolds Metals Co.** has announced a program for the expansion and modernization of its aluminum extrusion plant in Louisville, Ky., in order to speed the production of this metal which is still on the critical list. The foil plant in Louisville also will come into the program and will be equipped with auxiliary machinery which is expected to double its production of aluminum foil for the postwar packaging of foods, confections, drugs and tobacco products. **David F. Beard** has been named manager of advertising and public relations for the Louisville plant while **Donald G. Dunn** has been appointed manager of marketing research. **Glenn E. Carter** is the new manager of the foil division for the Ohio River area and **Clemons H. Davis** is manager of the Detroit, Cleveland and Pittsburgh Areas.

Harriet E. Raymond, assistant advertising manager of the **Celanese Corp. of America**, in charge of plastics and chemicals, has been awarded the **Josephine Snapp Award** for the most outstanding contribution to advertising made by a woman in 1944.

Abana Products, division of **General Shippers' Supply**, has announced its removal to larger quarters at 2460 North Pulaski Rd., Chicago 39.

Harold A. Kernell has been appointed general manager of the **Eagle Printing Co.**, division of **General Printing Ink Corp.** He succeeds **J. Howard Houston** who resigned May 25.

The **Madison Advertising Co.** is the new name for the concern known for the past 23 years as **Glicksman Advertising Co.** This agency specializes in package design for a number of nationally known products.

G. A. Gustafson has been appointed construction manager of the **General Electric Plastics divisions**. He will be succeeded by **L. S. Gleason** who will be the new manufacturing manager of the divisions.

Bradley Dewey, president of the **Dewey & Almy Chemical Co.**, received an honorary degree of Doctor of Laws at the 29th Commencement exercises of Harvard College on June 29 in recognition of his contribution to the national rubber program.

The **Shellmar Products Co.** recently purchased the **Rohm & Haas Co.'s South Gate, Calif. plant**. Shellmar will continue to operate the South Gate plant as a methacrylate fabricating unit until military orders are complete and the plant can be converted to postwar plastic and packaging business.

Minnesota Mining & Mfg. Co. has announced the promotion of **Robert R. Miller** to sales manager, industrial trades and **W. J. Streicher** to sales manager, distributor trades, in the Cincinnati territory. **Dr. Nelson W. Taylor** has been appointed to the post of technical assistant to the director of research. In addition, he will also continue as head of the ceramics section.

Dr. Charles M. A. Stine has retired as a member of the executive

committee of **E. I. du Pont de Nemours & Co.** and as its advisor on research and development, for reasons of health. He will retain his positions as vice-president and director. **Roger Williams**, assistant general manager of the explosives department will succeed Dr. Stine.

Bernard Schardt, plant manager, and **Harry Knight**, sales manager, have been admitted to partnership in the **Creative Print-makers Group**. **Constantine Velonis**, formerly a partner, is no longer connected with the organization. Plant facilities have been increased with the addition of 17,000 sq. ft. of manufacturing space.

Gair Santee Corp., a wholly owned subsidiary of **Robert Gair Co., Inc.**, has been incorporated under the laws of the state of Delaware. **Geo. E. Dyke** is president, **T. W. Earle** is vice-president in charge of wood and lands, **Parker Newhall** is secretary and **T. Raymond Pierce** is treasurer. When materials are more readily available, the company contemplates the erection of a sulphate pulp and paperboard mill, producing both bleached and unbleached kraft pulp and paperboard.

The **New Haven Pulp and Board Co.** of New Haven, Conn., has announced the purchase of the majority interest in the **Bartgis Brothers Co.** of Ilchester, Md. Included are two paperboard machines, a folding box plant and other buildings.

J. P. Skehan has been promoted to assistant sales manager of sheet and Vupak materials for **Monsanto Chemical Co.'s** plastics division. He succeeds **S. A. Bell** who resigned recently to enter the service of the **Columbia Proteksite Co.**, Carlstadt, N. J.

National Starch Products Inc., has learned that its Dutch plant, **Nationale Zetmeelindustrie N. V. of Veendam, Holland** was liberated April 14 by Polish troops of the Canadian First Army. The plant is reported to be undamaged and all of its personnel are said to be safe. The company expects the Veendam plant to resume the manufacture of potato starches, dextrins and liquid adhesives shortly.

Fabricon Products, Inc. of New York is the new name for the organization formerly known as **Waxed Papers Inc.**

Leslie C. Hoaglund has been appointed representative of the **Marathon Corp.** in the Cleveland territory and **Lloyd J. Stone** is the new representative of the company's food packaging division in the New Orleans territory.

H. A. Eggerss, vice-president in charge of the paper division of **Continental Can Co., Inc.** has announced the addition of a manufacturing plant in **Watertown, N. Y.** which is already turning out fibre side-wall, metal top and bottom cans.

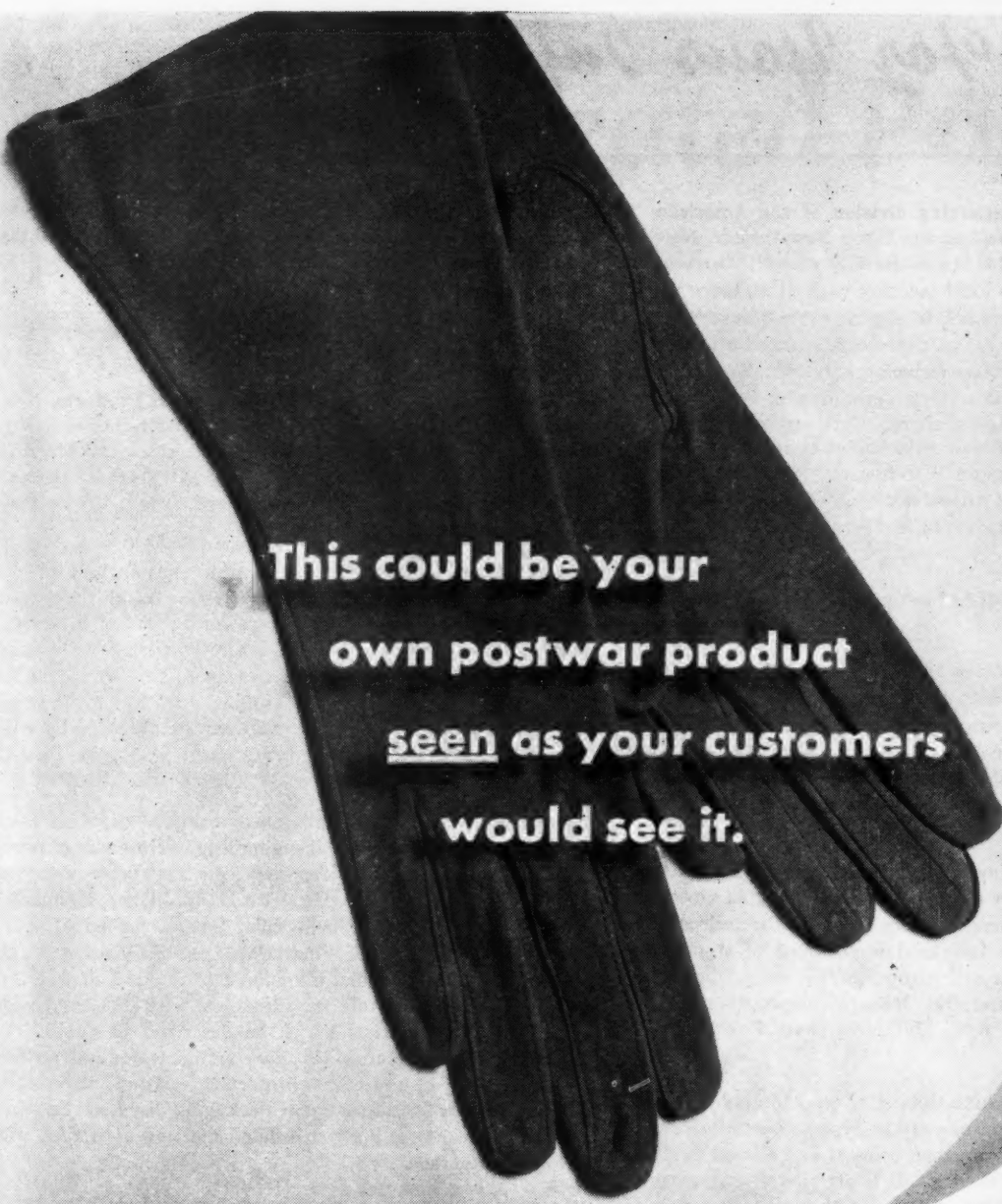
The **Clarvan Corp.**, Milwaukee, Wis., announces the opening of the **Clarvan Eastern Corp.** at Pittsburgh, with **Gerhard Meyer** as manager. The new plant will engage in the manufacture of flexible packaging materials.

Gordon Bartels, formerly associated with the **J. L. Clark Mfg. Co.**, has announced the organization of his own concern offering to the lithographic industry a complete line of packaging finishes.

As a step in its long-range postwar planning program, **Paisley Products Inc.**, Chicago is enlarging and modernizing its four-story factory in part to accommodate the expansion of its packaging adhesive line.

As head of the adhesives department of **American Resinous Chemicals Corp.**, **M. A. Kimmel** will direct research and development in adhesives and assume full charge of sales.

H. J. Higdon, Editor of **Phoenix** (Continued on page 178)



**This could be your
own postwar product
seen as your customers
would see it.**

PHOTOGRAPHED
THROUGH .010"
EASTMAN ACETATE SHEET



EASTMAN ACETATE SHEET

During the war, production of Eastman Acetate Sheet is allocated for war uses. But it's not too soon to plan *postwar* packages using this sparkling-clear, thermoplastic material. It can be drawn, beaded, folded, scored, crimped, or embossed. Beautiful printed effects are readily obtained. The Kodak Packaging Laboratory is at your disposal for practice—assisted by Kodak technicians—in fabricating Eastman Acetate Sheet. Write for an appointment.

**CELLULOSE PRODUCTS SALES DIVISION
EASTMAN KODAK COMPANY, ROCHESTER 4, N. Y.**

ATTRACTS • PROTECTS • SELLS

For Your Information

The local meeting of the packaging division of the American Management Assn. will be held at the Hotel New Yorker, New York, on September 18 and 19. In conformity with the Government request, this will be a local meeting with attendance restricted to those who live or work in the New York area (fifty mile radius). Complete details of the program will be mailed to all members. Some of the topics which are to be discussed are: The Coming Battle of Materials; New Techniques of Functional Plastic Packaging; Packaging Problems; Getting the Best from Your Packaging Machinery; Postwar Packaging and the Designer; Modern Materials Handling and Warehousing Methods; Non-Functional Characteristics of Adhesives; Peacetime Possibilities for "V" and "W" Board; Changes in Army and Navy Packaging Specifications.

The Western Canner & Packer has just released its 1945 Statistical Review and Yearbook.

The research division of the Arvey Corp. has just issued a colorful booklet entitled, "P.O.P. Marks the Spot . . . where Sales are Made"! It deals with the subject of point-of-purchase advertising, particularly from the standpoint of its benefits to the manufacturer's and distributor's salesman. A letter or postal addressed to the Arvey Corp., 3462 N. Kimball Ave., Chicago 18, will bring a copy by return mail.

A new McLaurin-Jones selling help—a booklet about Blue Star sealing tape—has just come off the presses. Tying in closely with the "Safe Shipping" program sponsored by the railroads, the booklet emphasizes the increased importance of stopping waste, cutting costs and saving manpower by wrapping and sealing cartons safely and carefully. Requests for copies should be addressed to P. W. Robinson, McLaurin Jones Co., Brookfield, Mass.

The Grocery Mfrs.' Information Council of the Grocery Mfrs. of America has just published one of the first booklets for consumers, "The Inside Story," designed to meet and answer many of the current questions on labeling. It is planned to encourage women to think about labeling to the end that manufacturers give them what they want on their packages.

Just off the presses is a new book entitled "Selling with Color," by Faber Birren and published by McGraw-Hill Publishing Co., New York. Of particular interest to packagers is Chapter 10, "Packages, Displays, Interiors," which attempts to give a clear picture of the ideal package and how it can be achieved. The price is \$2.50.

"Catalog Design" by K. Lönberg-Holm and Ladislav Sutner and published by Sweet's Catalog Service, division of F. W. Dodge Corp., New York, shows how a product catalog may be designed to employ the universal language of photographs, drawings, charts, symbols, signs, etc., in preparation for world markets.

At a recent meeting of the Chicago Professional Paper Group members and guests were shown the interesting graphic arts film, "The Material Side of Printing." Before the presentation, officers for the ensuing year were elected. These are as follows: Harry E. Weston of Fritz Publications, Inc., president; F. D. Long, Container Corp. of America, vice-president; Arnold McAneny of Bradner-Smith, treasurer; V. V. Vallandigham of Kelco Company, secretary.

The American Institute of Chemists, by mail ballot, has elected the following new councilors for three-year terms expiring in May 1948: Dr. Norman A. Shepard, chemical director, American

Cyanamid Co.; Dr. W. D. Turner, assistant professor of Chemical Engineering, Columbia University; Dr. James R. Withrow, professor and chairman, Chemical Engineering Dept., Ohio State University.

Roy Lundy has been added to the National Dehydrators Assn. staff as director of public relations.

A catalog has been issued by Sherman Paper Products, Newton Upper Falls, Mass., which will be particularly interesting to all bakers, in view of today's critical shortage in sugar. The catalog illustrates in full color baking and packaging products and discusses the ways in which pan-liners save sugar. Copies may be obtained from the company.

Modern shipping containers that enable a product to be packed in less than a minute are featured in a new booklet prepared by the Wirebound Box Manufacturers Assn., "Your Product . . . How to Ship It Safely at Lower Cost." The illustrated pamphlet explains that modern wirebound containers save vital man hours in a shipping department, cut shipping costs and conserve space in a shipping room. The pamphlet can be obtained by writing the Wirebound Box Manufacturers Assn., P. R., 43, East Ohio Street, Chicago 11, Ill.

More than 400 members and guests attended the final summer meeting of the Industrial Packaging Engineers Assn. of America at the Hotel Sherman, Chicago, on June 25. Topic of the meeting was Method II packaging, with O. W. Fisher, Kennedy Car Liner & Bag Co., Inc., Shelbyville, Ind., as principal speaker. He explained the various materials used in Method II packaging, their recommended uses and limitations and where they can be obtained. His talk was illustrated with slides and samples of Method II materials which he described in detail. J. C. Carroll, Davison Chemical Co., gave an illustrated talk on Protek Coat, a spray-gun applied protective coating material, and Henry Wallace of International Packaging discussed the tin can pack. The next regularly scheduled meeting of IPEAA will be held in September.

In response to the widespread interest in postwar planning, and the demand for designers in all branches of activity, the American Designers Institute, through its roster committee released its roster of members for the guidance of manufacturers, governmental and private advisory agencies and other sources. The roster, which includes outstanding designers in every phase of industrial endeavor in America, is presented in alphabetical form, outlining fields of operation of each designer. Price, \$2.00.

Entries for the 9th Annual Food Packaging Show are now being accepted by The Spice Mill magazine, New York, sponsors of this annual national event. Containers for coffee, tea, spices, flavors, condiments and related products are eligible. No entry fee is required. The closing date for the 1945 competition is September 1. Requests for complete show rules and entry blank should be addressed to The Spice Mill Publishing Co., 106 Water Street, New York 5, N. Y.

Better Finishes and Coatings Inc., Newark, N. J., have issued a 16-page illustrated book describing the use, properties and technical data on their peelable plastic film, "Liquid Envelope." This material has been used as a protective coating on war planes enroute overseas and is believed to have many peacetime applications, such as protecting laid-up tools or equipment. Copies may be had from the company, 168 Doremus Ave., Newark.

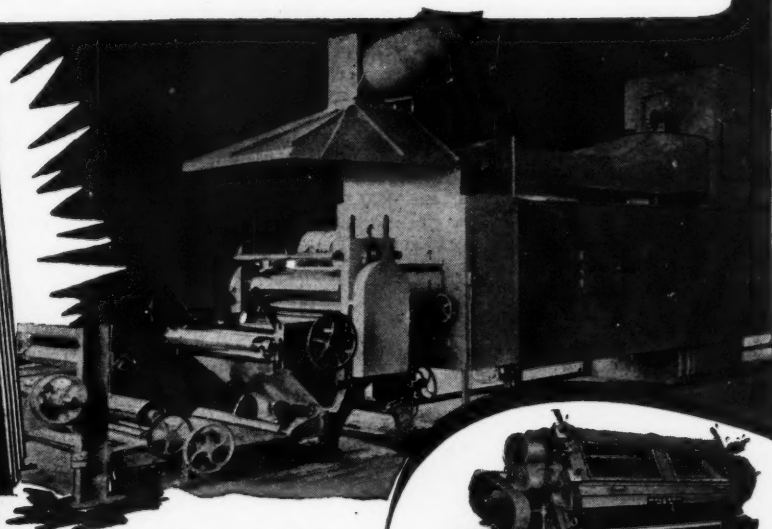
A new 80-page book on Self Service Merchandising of perishables has just been published by (Continued on page 178)

Plastics *Treated* Papers

provide remarkable new materials



Reduced reproduction of article published in May issue of *Plastics* magazine.



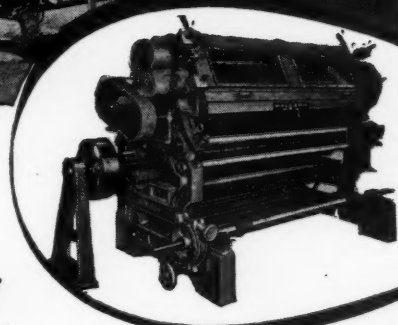
Waldron Treater System

and the machines that
make them possible are built by

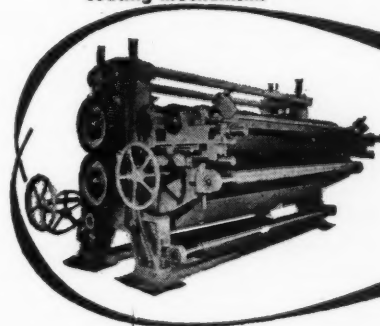
WALDRON

The Waldron Treater System illustrated above is a complete machine line consisting of Waldron mechanical treating apparatus in tandem with Ross Engineering air processing apparatus.

They're the talk of the industry—Paper, Plastics and the WALDRON machines that wed them! Paper not only takes on new appealing beauty but achieves new desirable properties of strength, durability and resistance to heat and moisture. Whatever the specific plastics treatment required, WALDRON machines are available to complete the job from unroll, thru treating and curing to the final rewind. Our Catalog No. 112 will point the way to new horizons for paper makers. Consult us on the possibilities for your product.



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U. S. patent digest

This digest includes each month the more important patents which are of interest to those who are concerned with packaging materials. Copies of patents are available from the U. S. Patent Office, Washington, at ten cents each in currency, money order or certified check; postage stamps are not accepted.

Bottle Carrier, J. Robinson, Jr. & M. L. Seibert (to Marsh Wall Products, Inc., Dover, Ohio). U. S. 2,377,520, June 5. A bottle carrier comprising a pair of opposed similar sheet material wall members, each forming one complete side wall and halves of two end walls of the carrier, a sheet material bottom member and a binder and guide bracket located at each end of the carrier.

Container, H. F. Waters, New York, N. Y. U. S. 2,377,533, June 5. In a container for foodstuffs including milk, comprising a cellulosic supporting body and a fluid-tight coating at least on the inner surface, said coating being of wax base having a melting point sufficiently high to retain its fluid-tight character after exposure to the sterilizing action of steam several minutes, and folded with tab construction to give hermetic tight seal.

Carton, P. Beldon (to National Union Radio Corp., Newark, N. J.). U. S. 2,377,602, June 5. A carton for tubes and the like comprising an outer tubular member having side walls and cut-out closing end flaps with inner member telescoping within outer member.

Carton, P. Beldon (to National Union Radio Corp., Newark, N. J.). U. S. 2,377,603, June 5. A carton for a cathode ray tube comprising an outer container having side walls and cut-out closing flaps, and inner supporting filler member.

Carton, P. Beldon (to National Union Radio Corp., Newark, N. J.). U. S. 2,377,604, June 5. A carton for the cathode ray tubes comprising an outer container member having side walls and cut-out closing end flaps, an inner supporting filler member of a telescopic form and consisting of a one-piece scored blank adapted to form a series of sections when folded along scored lines.

Packaging Machine, S. R. Howard (to Pneumatic Scale Corp., Ltd., Quincy, Mass.). U. S. 2,377,687, June 5. A packaging machine having in combination a horizontally disposed bag supporting block rectangular in section and equipped with bag stripping means.

Apparatus for Introducing Liquids into Containers, R. B. McKim, Winter Haven, Fla. U. S. 2,377,796, June 5. An apparatus for filling receptacles with oxidizable liquid such as citrus juice, said apparatus having means for moving the receptacle to be filled from a point of feed to a point of discharge, and valves for controlling flow of liquid and gas.

Car Lining, E. J. Braun (to E. I. du Pont de Nemours & Co., Wilmington, Del.). U. S. 2,377,989, June 12. A flexible tank adapted for transporting in boxcars hydrocarbon liquids comprising a substantially integral sheet of fabric coated with a synthetic rubber-like material highly resistant to the hydrocarbon liquids to be stored in the tank.

Dispensing Container, C. H. Duell, Sharpsburg, Pa. U. S. 2,378,003, June 12. A dispensing container consisting of a

shallow box adapted to contain a plurality of substantially flat medicinal tablets arranged in longitudinal rows.

Dispensing Container, E. B. Duell, Sharpsburg, Pa. U. S. 2,378,004, June 12. A dispensing container comprising a shallow tray-like receptacle and a cover slidably mounted thereon, said container being particularly adapted for dispensing elongated cylindrical capsules.

Nozzle for Pressure-Operated Containers, H. Buhler & E. Muller, Zurich, Switzerland, June 12. A one-piece nozzle and throat liner for pressure-operated dispensing container, which comprises a tubular shank member having a head at one end thereof and terminating at its other end in a helically slotted and resiliently extensible portion, and being provided with a normally closed slot defining a dispensing outlet, and when pressure is exerted on exterior portion causes extension of resiliently extensible portion and opening of said dispensing outlet.

Adjustable Labeling Device, H. B. Tuthill & H. F. Caldwell (to Oliver Machinery Co., Grand Rapids, Mich.). U. S. 2,378,112, June 12. A construction provided with means for feeding a continuous length of paper relative to the frame, and means for periodically cutting said paper into predetermined length, and equipped with labeling machine for periodically attaching labels to said paper.

Container, G. W. Blair (to U. S. Rubber Co., New York, N. Y.). U. S. 2,378,126, June 12. A liquid storage container comprising in combination an open-topped container formed of textile fabric and including a circular bottom wall and a cylindrical side wall attached thereto with plurality of rigid vertical supports disposed about the side walls of container.

Container, J. S. Cates (to U. S. Rubber Co., New York, N. Y.). U. S. 2,378,128, June 12. A readily assembled and dismounted liquid storage tank comprising a plurality of substantially rigid upstanding panels and constructed of flexible impervious fabric mounted within and supported laterally by the panels.

Storage Tank, J. T. Royer (to U. S. Rubber Co., New York, N. Y.). U. S. 2,378,159, June 12. A liquid storage device composed of flexible inelastic impervious material with cylindrical side walls, and provided with an outer wall of flexible sheet material constituting a ground cloth which extends beyond outer wall.

Container, F. A. Sawyer (to U. S. Rubber Co., New York, N. Y.). U. S. 2,378,161, June 12. A liquid storage device comprising a closed container formed of flexible substantially inelastic impervious material and including a circular bottom wall and a circular top wall connected by a cylindrical side wall.

Bottle, A. Fevas, Akron, Ohio. U. S. 2,378,205, June 12. A container or bottle comprising a body provided with an integral, solid deep throat, and being provided in its side with a full-length tubing-receiv-

ing groove, and said solid deep throat being provided only with a passage comprising a relatively large tubing-receiving section and a relatively small outlet section.

Crate, A. L. Kiff, Hammondsport, N. Y. U. S. 2,378,224, June 12. A knock-down crate comprising a pair of end members having registering socket loops on their top and bottom edges, longitudinal slats having their opposite ends rabbeted to form reduced end portions and abutting shoulders, said end portions being insertable in said loops.

Case, P. H. Waller (one-half to Charles C. Kirk, Evanston, Ill.). U. S. 2,378,267, June 12. A knock-down case comprising a bottom panel, four upright panels and a cover panel with metal strips joining the several panels.

Sheet Feeding Mechanism, W. F. Leonard (to Continental Can Co., Inc., New York, N. Y.). U. S. 2,378,306, June 12. The combination of means for holding a stack of flat sheets, means for withdrawing said sheets singly and in succession from one end of the stack in a direction perpendicular to the sheeting.

Package Cutter, L. Walters, New York, N. Y. U. S. 2,376,887, May 29. A cutter comprising a handle formed of complementary sides, opposed flat extensions carried by said sides, a cutting blade disposed between and projecting from said extensions extending in the direction of the other extension, said blade having an elongated opening through which said pin engages and also having a plurality of notches opposite from the cutting edge.

Paper Container, F. R. Cookston, Los Angeles, Calif. U. S. 2,376,904, May 29. A container comprising a single horizontally elongated rectangular strip of paper folded longitudinally to provide a body portion composed of similar front and back portions and a closure flap on the upper edge of said portion and machine stitching including spaced parallel vertical lines of stitching connecting said front and back portions and embodying interlocked bobbin and spool threads, there being a plurality of pockets in the body portion, between each pair of adjacent vertical lines of stitching.

Screw Closure, J. C. Ford (to The Celon Co., Madison, Wis.). U. S. 2,376,909, May 29. A glass bottle or like receptacle having a neck portion and an opening in the neck portion, a glass closure for the opening and having a closure top with downwardly extending integral skirt to overlie the neck and interengaging means on inside of glass closure whereby closure may be secured to the neck, and a band of resilient material shrunk about said neck.

Label Holder for Boxes, E. C. Harden, Conway, Ark. U. S. 2,376,916, May 29. A device in combination with a box including a bottom section having bottom wall and side walls and a cover section having a top wall provided with a sight opening and side walls disposed to fit over the upper parts of the side walls. Side wall of cover section having an inwardly projecting rib, a holder adapted to be slidably inserted with the cover section to hold a label sheet under the cover top, said cover section having a transparent window smaller than top but larger than side opening therein.

Automatic Bottom Bag and Method of Making Same, A. B. Haslacher, New York, N. Y. U. S. 2,377,005, May 29. A bag comprising a length of flattened tube, said bag having an outer ply of paper and



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inner ply of heat-fusible material, said bag having a diamond fold bottom including flaps defined by slits in opposed walls.

Method of Fabricating Containers, W. F. Pittman (to the American Paper Bottle Co., Toledo, Ohio). U. S. 2,377,103, May 29. The method of fabricating containers comprising forming a paper blank having an access tab defined by incisions, the tab comprising portions of two adjacent relatively foldable panels.

Package, M. Weisman (to Mabe Corp., New York, N. Y.). U. S. 2,377,118, May 29. A sealed package containing infusible substances suitable for beverages, comprising sheets of thermoplastic, porous, flexible, thin paper-like material, resistant to boiling water, said sheets being of different widths and sealed in face to face relation about their edges, edges of larger sheets being crimped to edges of smaller sheet to form an enclosed pouch-like bag.

First Aid Kit, R. L. Watkins, Paducah, Ky. U. S. 2,377,117, May 29. In a first aid kit, a cylindrical body provided with a disinfectant reservoir and a chamber and a slot connecting with the chamber, an applicator connecting with the reservoir and extending exteriorly of one end of the body, bandage in roll form arranged in the chamber and fed therefrom by way of the slot, a closure casing having a sealing fit with the body about the applicator, covering the slot and including a pocket clip.

Dispensing Container, H. L. Apfelbaum (to Victor Metal Products Corp., Brooklyn, N. Y.). U. S. 2,377,120, May 29. In a dispensing container for pills, a tubular cover part open on at least one end and having a top wall, a bottom wall and opposed side walls, all being plane of same thickness, said container being slidably fitted into the cover part, and so arranged that when partially open approximately half of a pill is exposed, and may be discharged by tilting container.

Shipping Box, J. E. Borah & J. M. Borah, Osceola, Ind. U. S. 2,377,125, May 29. A box comprising a body part including bottom and side panels, a foldable part including a cover panel folded from the upper edge of one of said side panels, a flap folded perpendicularly inwardly from an edge of a panel of one box part and folded centrally inwardly upon itself to define inner and outer flap portions.

Slitting and Scoring Machine, H. L. Cohen (to S. & S. Corrugated Paper Machinery Co., Inc., Brooklyn, N. Y.). U. S. 2,377,130, May 29. An apparatus for cutting sheet material, a circular cutting knife assembly for a rotatable shaft, comprising a circular mounting member, and a circular knife blade secured thereto.

Sealing Facing and Closure, I. F. Bulatkin (to Crown Cork & Seal Co., Inc., Baltimore, Md.). U. S. 2,376,899, May 29. For use as material for the sealing discs of container closures, a web of pulp board having on at least one of its faces a film of a wax material, and a web of cheesecloth embedded in said film.

Ampule, A. E. Smith, Los Angeles, Calif. U. S. 2,377,274, May 29. An ampule having a tubular portion made of plastic material, a slidable piston member positioned with the upper end of the ampule, a puncturable stopper positioned within the lower end of the ampule, said stopper having a compartment housing a drug and an open top communicating with said compartment, said ampule having an integral partition of plastic material positioned just above said stopper.

Container and Method of Forming Same, G. A. Moore (to Shellmar Products Co., Mt. Vernon, Ohio). U. S. 2,377,358, June 5. The method of forming a container, which comprises providing a blank consisting of a paper material having a thermoplastic adhesive coating, and folding same into tubular formation, with thermoplastic surface innermost.

Cap, G. B. Cooke & V. A. Ryan (to Crown Cork & Seal Co., Inc., Baltimore, Md.). U. S. 2,377,402, June 5. A cap having a cushion liner of cork composition, the particles of cork being bonded by a reaction product of zein and shellac dissolved in glycerine.

Container, M. I. Williamson (to National Folding Box Co., New Haven, Conn.). U. S. 2,377,471, June 5. A box formed of sheet material and comprising a containing part, a cover part, and articulative linkage interconnecting the said parts, said containing part having lateral panel walls defining a mouth.

Carton or Container, R. M. Glover (to Box Blank Corp., New York, N. Y.). U. S. 2,377,472, June 5. In a carton or container, the combination of a hollow body part having adjacent one end an access.

Packaging Machine, D. Ray & C. Ray (to Kraft Cheese Co., a corp. of Delaware). U. S. 2,378,324, June 12. A packaging machine comprising a vertically reciprocable forming plunger; a forming head with plurality of forming elements, and supporting member for each forming element adapted to provide unrestricted passage ways for blanks.

Mechanism for Closing the Open Tubular End of the Wrapper of a Package, C. Arelt (to American Machine & Foundry Co., a corp. of New Jersey). U. S. 2,378,457, June 19. In a packaging machine, the combination with members arranged to admit a package having a wrapper enclosing the girth and one end thereof, said wrapping having a tubular portion projecting from the other end of the package, means for moving one of said members in a direction to meet the package being inserted and move along with said package until it is fully inserted between said members to assure the proper location of the package for folding the wrapper.

Container and Method of Sealing Same, P. V. di Cosmo (to The Canister Co., Phillipsburg, N. J.). U. S. 2,378,470, June 19. A container comprising a fibrous body having an oil-resistant lining, a fibrous closure member applied to the container body, and having an oil-resistant line, and an oil-resistant sealing diaphragm located between the container body and closure member.

Sewed Double Side-Seam Bag, H. A. Rohdin, Glen Ridge, N. J. U. S. 2,378,503, June 19. A multi-ply double side-seam bag having an infolded gusset at each end, said side seams being sewed.

Collapsible Crate, C. H. Roumilat, Neptune Beach, Fla. U. S. 2,378,505, June 19. A collapsible shipping crate comprising two side members, bands encircling the side members and extending across the space between them with means for pivotally securing the bands to the sides.

Container, A. H. Warth & W. C. Rainer (to Crown Cork & Seal Co., Baltimore, Md.). U. S. 2,378,521, June 19. A metal food and beverage container having a lining applied directly to the metal wall surface, said lining consisting of a mixture of wax and mica powder.

Safety Razor Case, P. A. Derham (to Armstrong Cork Co., Lancaster, Pa.). U. S. 2,378,622, June 19. In a packaged safety razor unit, a compartmental container base to receive the head of a safety razor and a package of razor blades, an intermediate compartment having walls defining an opening extending centrally of said container base, a handle-engaging projection on the cans and disposed in said intermediate compartment, a container cover having a central opening therein, said cover being inter-engageable with said base.

Egg Packing Material, J. R. Grant, Chicago, Ill. U. S. 2,378,627, June 19. A filler flat for packing eggs, comprising a plurality of egg cups arranged in evenly spaced rows with individual cups in each row evenly spaced therein.

Apparatus for Crowning Containers under Vacuum, J. Kanotr (to The Liquid Carbonic Corp., Chicago, Ill.). U. S. 2,378,640, June 19. The combination with a crowning head having a throat member and crimper means arranged in said throat member, and a crown support member having a crown rest therein and separable from said throat member to receive a crown on said rest, means for a seal and also means for drawing a vacuum in said chamber while said chamber is sealed and a crown is supported on said rest.

Suit Cover and Carrier, C. L. Threton, Birmingham, Ala. U. S. 2,378,665, June 19. A garment cover and carrier bag comprising one piece of flexible material folded over itself to form a closed edge, the top edge of material being fastened together except for an opening for hanger.

Receptacle and Closure Therefor, S. N. Buchanan, Westmoreland Hills, Md. U. S. 2,378,683, June 19. A device comprising a receptacle, a closure therefore, and spring means secured to the top of said closure adjacent an edge thereof, said spring means being movable from a closure-locking position to a closure-releasing position and vice versa.

Paper Container, H. Carew (to Dixie Cup Co., a corp. of Delaware). U. S. 2,378,750, June 19. In combination with a paper drinking cup, a handle therefor, said handle being fashioned of flexible material.

Cigarette Case, H. A. Husted, St. Clair, Mich. U. S. 2,378,774, June 19. A cigarette case adapted to hold an opened pack of cigarettes and to dispense.

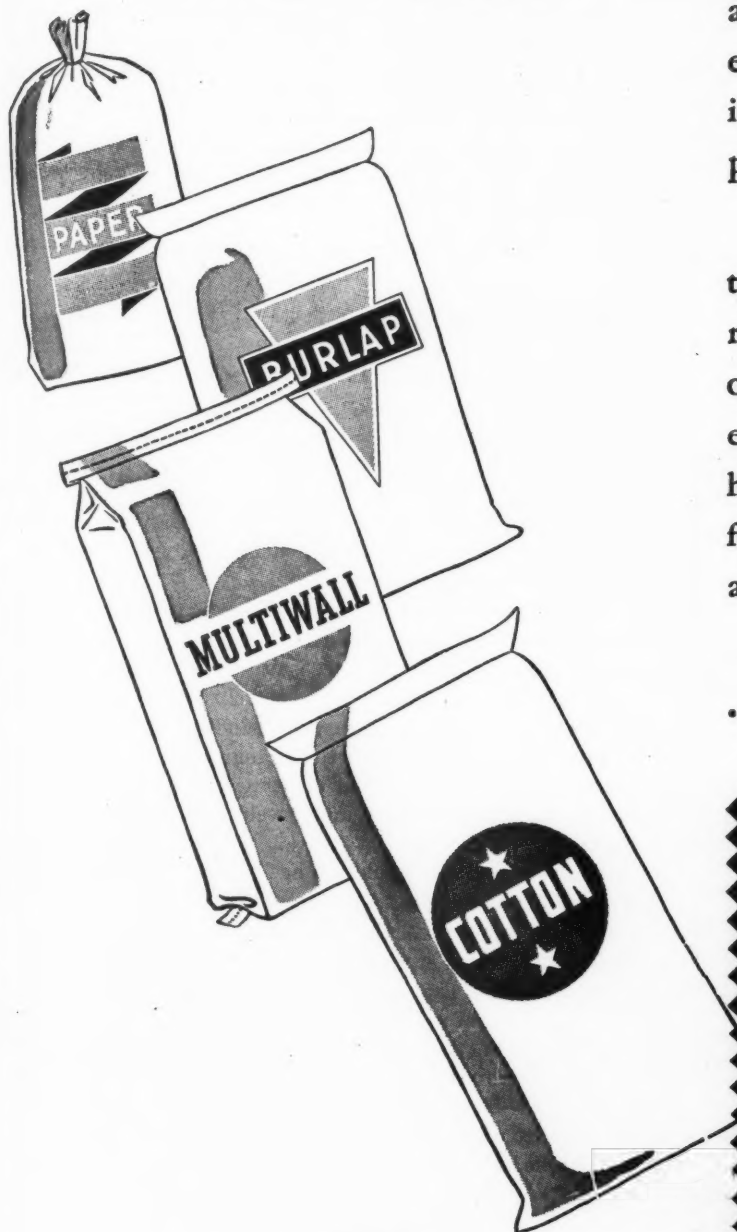
Tray Former for Wrapping Machines, O. Sandberg (to Lynch Mfg. Corp., Defiance, Ohio). U. S. 2,378,796, June 19. In a tray forming mechanism for wrapping machines, a card hopper adapted to receive a stack of cards, card shaping mechanism there-adjacent, means for pushing the lowermost card of said stack of cards from said hopper to a position above said card shaping mechanism.

Container and Method of Forming the Same, A. B. Wilson (to Acme Steel Co., Chicago, Ill.). U. S. 2,378,878, June 19. The combination in a container, of an annular non-metallic wall, a metallic rim having a part surrounding a portion of said annular wall, said annular wall and said rim having inwardly extending parts, and an end wall having parts attached to each other independently of said rim and embracing said inwardly extending parts of said annular wall and said rim. This is formed into container by rolling a flat non-metallic sheet and securing its edges together to form cylindrical wall, and placing metallic rim around end portion.



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WHEN you buy your bags from Bemis, among the important advantages you enjoy is this: You can buy whatever type is best for your particular use—cotton, paper, multiwall, burlap or waterproof.

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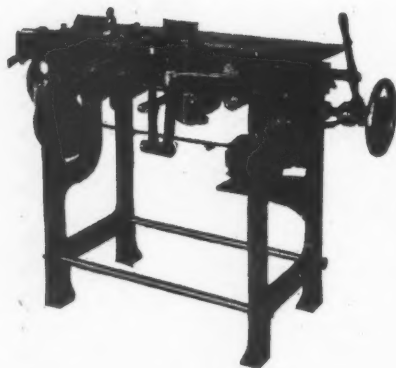
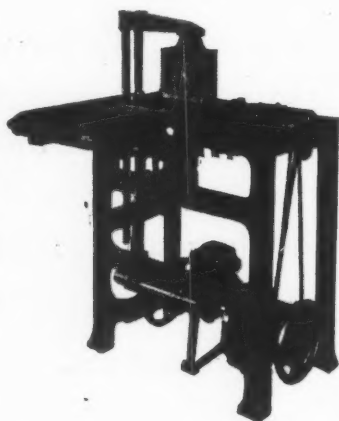
Plant managers everywhere are searching for the smallest items in cost reduction so that they will be prepared for that fearsome "R" Day—reconversion and the return to civilian competition.

Many such managers have checked into their hand operations of carton set-up and closure. In a large number of cases they have found that PETERS economical semi-automatic and automatic machines can show substantial savings in these two operations over present methods. At the same time many needed workers will be released for other jobs.

If you have a problem of hand cartoning, send a sample of the various sizes you expect to use after Reconversion Day together with your approximate production requirements. PETERS will gladly make recommendations for your specific needs.

Prompt action is recommended as deliveries will be made in the same sequence orders are received.

This PETERS JUNIOR CARTON FORMING AND LINING MACHINE sets up 35-40 cartons per minute, requiring only one operator. After the cartons are set up, they drop onto a conveyor where they are carried to be filled. If you desire to handle several sizes of cartons, machine can be made adjustable.



This PETERS JUNIOR CARTON FOLDING AND CLOSING MACHINE closes 35-40 cartons per minute requiring no operator. After cartons are filled, they enter machine on conveyor and are automatically closed. Can also be made adjustable to handle several different size cartons.

PETERS MACHINERY COMPANY.
GENERAL OFFICE AND FACTORY
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Engine bags . . .

(Continued from page 100) situation, Pliofilm may not disappear entirely from the military packaging scene. It may continue to be used on smaller articles where transparency is particularly important, as in the case of bombsights. If and when our crude rubber supply can be replenished as a result of current Pacific military operations, Pliofilm will again be in a competitive situation.

At the present stage, it is difficult to arrive at any accurate cost comparison. With the benefit of several years of volume production, Pliofilm has been selling at about 19 cents per 1,000 sq. in. With production barely under way, the foil laminations have been selling at between 50 and 60 cents per 1,000 sq. in.; it remains to be seen how far this price can be lowered.

CREDITS: *Plastin manufactured by Plastic Film Corp., New York, using foil from Aluminum Co. of America, Pittsburgh, and vinyl resin from Bakelite Corp., New York. Metalam manufactured by The Dobeckmum Co., Cleveland, using foil from Aluminum Co. of America and Vitafilm vinyl film from the Goodyear Tire & Rubber Co., Akron. Engine bags fabricated by Kennedy Car Liner & Bag Co., Inc., Shelbyville, Ind.; Shellmar Products Co., Mt. Vernon, O.; Milprint, Inc., Milwaukee; Stanley Manufacturing Co., Dayton, O.; Atlanta Paper Co., Atlanta, Ga.; Clarvan Corp., Milwaukee; Pervel Corp., Norwich, Conn.; U. S. Envelope Co., Springfield, Mass.; and Breslee Mfg. Co., New York.*

Long-life boxes . . .

(Continued from page 123) saturated papers and leather skivers.

With the method of manufacture used, the range of box styles is as wide as that used for cardboard boxes; almost any style of cardboard box can be duplicated in the veneer-kraft material, it is said. It opens up to paper box manufacturers applications in many fields which that industry previously could not service.

Present production is directed primarily along the lines of re-use packages. Strength and durability of the material make it suitable for re-use at a cost said to be little higher than that of single-use packages previously used for toiletries, stationery and similar eye-appeal products.

The manufacturer expects to find many applications for the box in the fields of surgical instruments, cutlery, tobaccos, cakes, cosmetics, watches and jewelry, radios and even industrial items.

The veneer-kraft lamination has already been enlisted for a war job as a shipping container and after the war it should have interesting possibilities as an air cargo container, for which its rigidity, strength and light weight make it ideally suitable. Some examples of air cargo shipping containers, with and without wood cleating, are illustrated herewith.

As a shipping container the material has the additional advantage of waterproofness and weatherproofness comparable to that of V-board. A wide range of physical properties can be provided, depending upon the kind and amount of plastic used in the lamination.

CREDITS: *Veneer-kraft lamination, "Tekwood," manufactured by U. S. Plywood Corp., New York. Boxes fabricated (patent applied for) by The Warner Bros. Co., Bridgeport, Conn. Statistical data from The Warner Bros. laboratory.*

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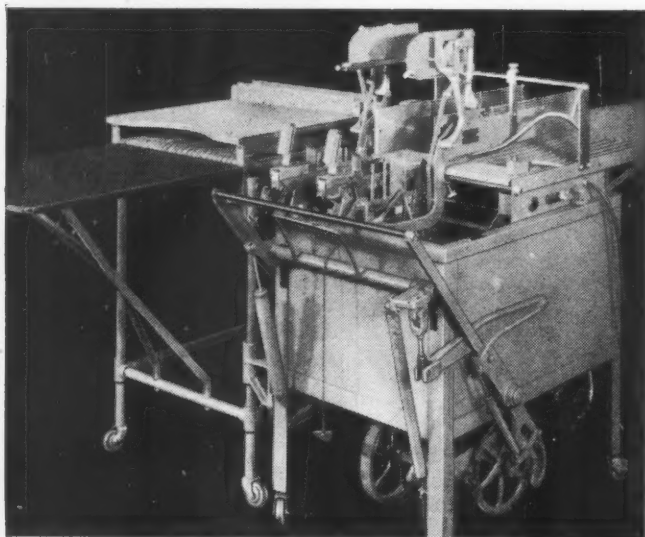


LET HEEKIN HELP YOU WITH YOUR NEW METAL CONTAINER
ANY SHAPE · ANY SIZE · ANY COLOR · ANY QUANTITY

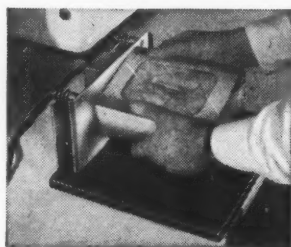
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MODEL M P S WRAPPING MACHINE



Speedily and economically wraps packages in many sizes. Cuts its own wrappers from cellophane or paper rolls. No tools needed to adjust. One girl is all you need to operate or adjust either the heat-sealing or glue-sealing models. Mounted on casters, the MILLER Model MPS can be rolled to the job. Plugs into any wall outlet for power. Send us samples of your packages. We'll quickly give you complete information on this versatile, dependable wrapping machine.



CORLEY-MILLER Model BJ VERTICAL HOT PLATE

Heat seals bags, cartons or other packages in MST Cellophane, waxed, or thermoplastic coated papers. Ideal for trays or window boxes. Non-corrosive stainless steel and aluminum construction makes it perfect for use in quick freeze plants, locker plants and other damp locations.

MACHINES FOR: WRAPPING, BAG MAKING, BAG & CARTON FILLING
BAG CRIMPING OR CLOSING, GLUING & SHEETING, SANDWICH MAKING



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Water-vapor permeability

(Continued from page 140) various vapor-pressure differences. This shows pure cellulose to be as good a barrier as cellophane at low relative humidities, but the increase of P with humidity is not nearly so great in the case of cellophane.

TABLE III—EFFECT OF RELATIVE HUMIDITY ON PERMEABILITY CONSTANT AT 25°C.

Material	Relative Humidity %	$P \times 10^4$
Saran	63	0.16
Saran	84	0.14
Saran	100	0.15
Cellulose sheeting (uncoated, unplasticized)	19	3.3
Cellulose sheeting (uncoated, unplasticized)	27	4.7
Cellulose sheeting (uncoated, unplasticized)	42	69
Cellulose sheeting (uncoated, unplasticized)	85	83
Moistureproof cellophane	21	4.9
Moistureproof cellophane	42	6.2
Moistureproof cellophane	63	8.9
Moistureproof cellophane	82	10.3

Dependence of permeability constant on temperature

It seems unfortunate that so little work has been carried out on the temperature dependence of water-vapor permeability of packaging films. As a consequence, this variation is often not considered in the prediction of behavior under use conditions. We have investigated this temperature dependence for a number of organic films and find that in every case the permeability constant is an exponential function of absolute temperature just as is the vapor pressure of a liquid. This is precisely what Barrer¹ has found for the permeation of permanent gases through organic films. The exact relation is

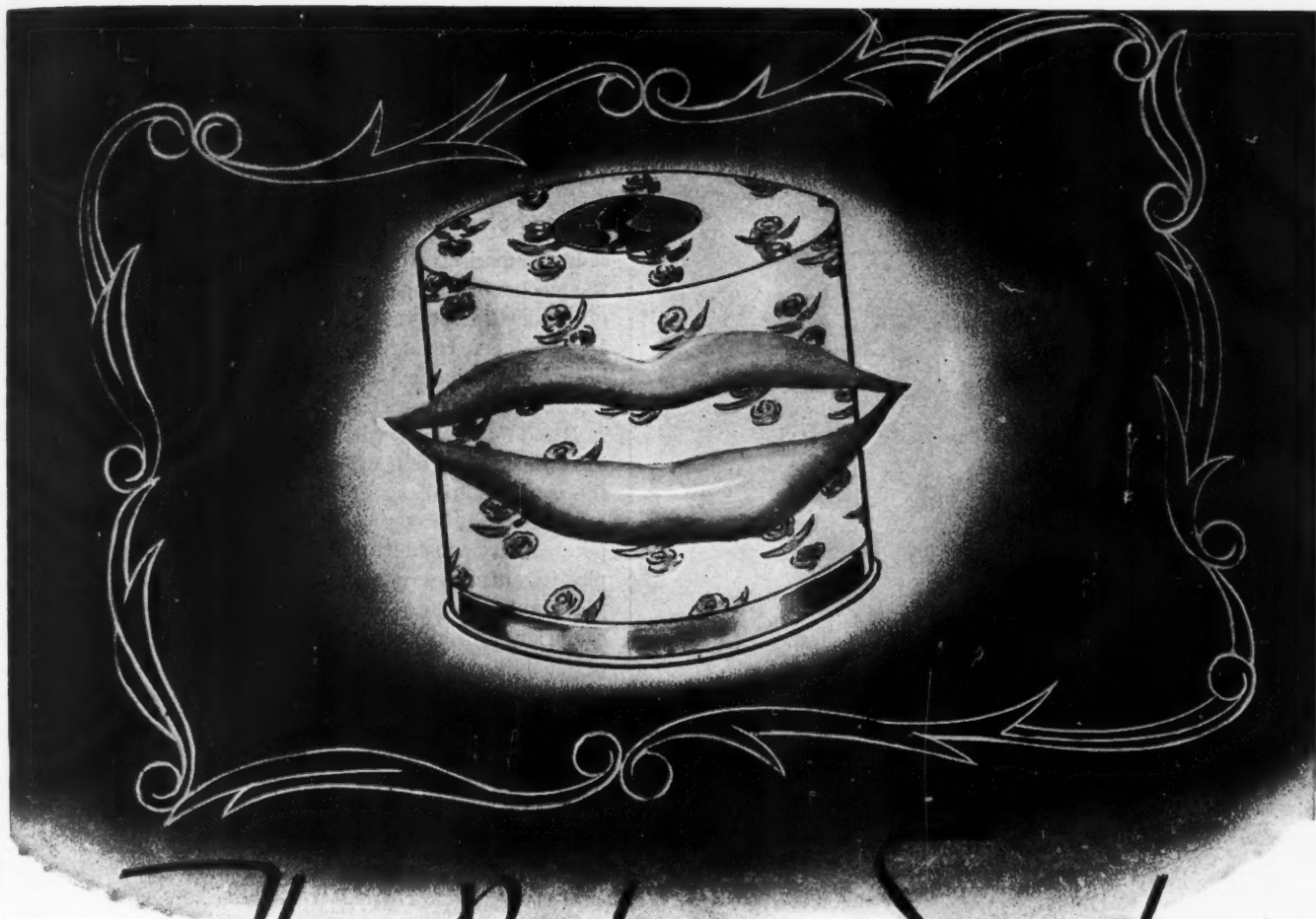
$$P = P_0 e^{-E/RT} \quad (3)$$

where P is the permeability constant at T° Absolute, R is the gas constant equal to 1.985 and E , known as the energy of activation, governs the sensitivity of the permeability constant to temperature.

Returning to actual measurements, we show in Fig. 3 typical data for polythene. These examples show that the permeability constant increases from about 50 to 200% for a 10 deg. C. increase in temperature. Measurements on several other materials fall within this range. It would be useful if the measurements at a few temperatures could be extrapolated so that P at any reasonable temperature could be predicted. This is not feasible on the plot shown in Fig. 3 but it can be done accurately if the data are plotted differently so that a straight line is obtained. This is obtained by plotting the data as logarithm of P versus the reciprocal of absolute temperature ($^\circ K$). In Fig. 4 this kind of plot is shown.

Experiments have shown that plots such as Fig. 4 are straight lines over as large ranges of temperature as we have measured. This is important, for it permits the prediction of the permeability constants at low temperatures where it is most difficult to make measurements. The application of this to frozen food packaging is obvious.

Interpretation of the energies of activation measured for a number of film materials shows that high values of this energy



The Package Speaks

With a touch of creative magic, Packaging Papers have become articulate. They whisper, they shout, they demand. They're Marvellum's new line of Papers Distinctive — packaging papers that speak.

Not alone new designs, not alone new ideas, not alone new materials — but these all incorporated into selling motifs that tell a sales story in a voice that must be heard — the voice of MARVELLUM.

Soon, very soon, we will be filling your orders for this new line of Papers Distinctive — Packaging Papers that speak.

Meanwhile, our Manufacturing Division is as steadily stepping up production as war-time restrictions permit. Send along your requirements — it is quite possible that we may be able to render surprisingly good service.

PAPERS DISTINCTIVE

THE *Marvellum* COMPANY
H O L Y O K E

M A S S A C H U S E T T S



LUSTEROID....

Your Partner in Product Protection

You'll benefit in every way by making LUSTEROID "your good man, Friday," in your post-war packaging.

LUSTEROID vials and tubes combine full protection with maximum visibility. Yet they are featherlight for economy and easy handling. All colors of the rainbow . . . clear or opaque . . . give the package designer free rein. With LUSTEROID, no labeling is necessary as these modern plastic containers are printable. No protective packing or partitioning are required in shipment.

Sizes from $\frac{1}{4}$ " to $1\frac{1}{4}$ " in diameter and lengths up to 6".
Cork, clip-on or screw-cap closures.

Write for post-war details.

L

LUSTEROID CONTAINER CO., INC.

Formerly Lusteroid Division of Sillocks-Miller Company

Office and Factory

10 W. PARKER AVENUE, MAPLEWOOD, N. J.
MAILING ADDRESS: SOUTH ORANGE, N. J.

term (high sensitivity to temperature variation) go hand in hand with crystallinity and low values of the permeability constant. This seems reasonable since one would expect that a crystalline arrangement of molecules would be the most efficient barrier one could produce out of a given quantity of molecules.

Effect of plasticizers on permeability constant

In comparison to the tremendous effect of plasticizers on the mechanical properties of films, it is surprising to find that often they do not greatly influence the permeability constant. In fact, there seems to be no direct relation between permeability and mechanical behavior.

The effect of plasticizers is most easily seen in the changes in *D* and *S* that occur when it is added. As one would expect, the diffusion constant will increase because it will be easier for the water molecules to diffuse through a flexible plasticized medium than through a rigid plastic. This will cause the permeability constant to increase. On the other hand, many plasticizers are less compatible with water than resins such as polyvinyl chloride. Under this circumstance, the solubility coefficient will be lowered, producing the same effect on the permeability constant. Thus it is possible that these two changes approximately compensate and the resultant permeability constant is little changed.

However, it is often the case that the solubility constant is also increased, in which case the permeability constant may increase several fold. In our investigation of some polyvinyl chloride films made with several representative plasticizers, the permeability constant was found to vary for 45% plasticizer content from one-half to five times the value for the pure film. Most of the plasticizers gave increases of about 50 to 100% for the permeability constant.

Literature cited

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- ³ Taylor, B. L., Herrmann, D. B., and Kemp, A. R., *Ind. Eng. Chem.*, 28, 1255 (1936).

Packaged distribution . . .

(Continued from page 127) for opening and instructions for twisting the top of the bag to protect unused contents after it is opened.

When the bags are completely filled and sealed they are placed in trays—each marked for its destination in the plant. The trays are loaded on motor trucks for delivery before the beginning of each shift. Upon arrival at their destination they are placed in circular racks where each worker finds the packages for his own day's work. A sign above cautions workers not to take more than necessary to prevent waste.

The use of cellophane for this purpose, helps to eliminate mistakes, because the pieces of hardware are all visible through the envelopes. Pieces of hardware too large for packaging are counted out and placed on the delivery trays and taken to the stations along with the packaged hardware.

This entire procedure is similar to packaging distribution methods used in many other war plants. It is an important step in production progress and a new development in packaging that will undoubtedly be continued on postwar assembly lines.

CREDITS: Cellophane bags, Dobeckmun Co., Cleveland, Ohio. Filling machine, Triangle Package Machinery Co., Chicago, Ill. Heat-sealer, Heat-Seal-It Co., Philadelphia, Pa.

IT'S WHAT YOU DO WITH CELLULOSE FIBRE THAT COUNTS



Your Own "Big Push" Starts With Paper

When all the guns stop firing—then comes the big push for business.

Large companies grown larger, and small companies grown big, will seek to expand their activities in various directions so that they may hold their place or even gain in stature.

Paper and printing will open new markets for old as well as new products—will educate new dealers and their sales staffs—will introduce and establish amazing postwar innovations—will help to seed and nurture a new peacetime prosperity.

Again the right paper for the job will be important. For this will be the era of quality paper for fine catalogs, brochures, booklets, folders and training books—printed in exciting

color or in sparkling black and white.

Oxford, as always, will have the quality commercial papers for these particular purposes, backed by good counsel in their uses.

Making a thousand miles of quality paper daily for many years has taught us many useful lessons. Continuous research in getting the most out of cellulose fibre, and meeting paper problems since 1900, give us a fund of experience which can be fruitful to users of fine printing.

Included in Oxford's line of quality printing and label papers are: Enamel-coated—Polar Superfine, Mainefold, White Seal, Rumford Enamel and Rumford Litho CIS; Uncoated—Engravatone, Carfax, Aquaset Offset, Duplex Label and Oxford Super, English Finish and Antique.



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Your No. 1 customer, at this moment, is probably the United States Government. But you have new, peacetime products in mind. And besides problems of design and production, you are thinking about packaging. A set-up box to increase the unit of sale? A printed band to give a seasonal note? A transparent overwrap to prevent soiling? Or perhaps a colorful tag or label to focus attention on special selling features?

That's where Dennison comes in. Here in a *single* organization you can find the answers to a variety of the questions raised whenever packaging in general is considered. So whether you're pondering one possibility, or more, put your problems up to

Dennison

PAPER PRODUCTS FOR MORE THAN A CENTURY

We'll be glad to help you plan today the set-up boxes or packaging accessories that can be manufactured tomorrow. Present production is given over to war work, but development work with leaders of American industry still goes on. You, too, can make our century of varied experience yours by writing to Dennison Mfg. Co., 227 Ford Ave., Framingham, Mass.



TAGS • LABELS • SEALS • SET-UP BOXES • MARKING SYSTEMS • PAPER SPECIALTIES

Flow packing . . .

(Continued from page 134) is not encouraged as it violates the best flow principles. As an alternative, the Army is using tilting devices. At the first point in the stenciling section a tilting device (Fig. 17) is used to swing the case away from the stenciler and so present the near side surface upwards. When this has been stenciled it is returned to its normal position and moves along a normal section of the runway where the top surface is stenciled. Then it proceeds to another tilting section which tilts in the opposite direction and brings the far side uppermost.

On heavy packing lines where, while the stores may be movable along rollers they are nevertheless too bulky or heavy to be manhandled without the aid of tackle, the use of tilting sections for stenciling would be dangerous. In order to give the stenciler access to all sides of the case, lift-up sections may be employed as an alternative (see Fig. 18). These lift-up sections may also be fitted in place of the swing-out section which we have already described in conjunction with the packing operation.

The conveyor line for each individual unit may end after the stenciling point. But there is one more operation to be completed. That is weighing. This can be done so rapidly that one weighing machine can serve a number of lines and stenciled cases may be transferred to "run out" roller conveyors (Fig. 19 and the heading illustration), passing through the weighing machines before being loaded into road or rail transport. The weigher, who is also responsible for marking the weight on the case, was at one time provided with a small library of weight stencils cut in thin sheet metal, covering all ranges of weights from the minimum to the maximum, at 4 lb. intervals. A better method has proved to be the use of one sheet cut with the figures 0 to 9. The use of compensatorial weighing machines materially assists the plan of servicing several lines with one machine.

Repetitive packing differs from all other lines in that only one type of store is being packed. The depots, when they have a shipment of this kind to handle, frequently dispense with the overhead case feed system and erect a temporary packing line to suit the particular requirements of the store involved. Because all the cases carry the same descriptive lettering, it is an advantage to pre-stencil, employing a small team of operators, each doing one specific part of the work. The stenciling need not necessarily be done in the same shed, though to avoid confusion it is advisable that all operations be accomplished in self-contained units. From the stenciler the work will then flow forward to the packer and so on, until ready for dispatch. Operations, however, may be broken down if speed and flow warrant it. For instance, packing may be done in two stages, the first operator placing the packing material and the stores in the bottom of the case and the second operator completing the job; similarly with nailing and binding.

Heavy packing requires a very different setup, and the layout will depend largely upon the provision of mechanical lifting or hoisting devices. The stores can be divided into two types, viz.:

1. Those which require lifting devices but which can be manhandled on heavy roller conveyors or
2. Those which must always be handled by lifting devices and which cannot be easily negotiated on rollers.

In the first category, stores may be dealt with in much the same way as on medium packing lines, except that instead of



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AUTOMATIC Packaging and Bottling are part and parcel of the American standard of living. Pneumatic continues to pioneer in methods that enable mass producers of essential products to package and bottle them at lower and lower cost per container . . . making them thriftily available to wider and wider markets.

In war and peace, through depressions and boom times, Pneumatic's goal for half a century has been the same: to design and manufacture equipment that packages foods, beverages, medicines, cosmetics, and other widely-consumed products with economic precision and efficiency.

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1895 OF 1945

PNEUMATIC
PACKAGING AND BOTTLING
MACHINERY

Speaking of Adjustability

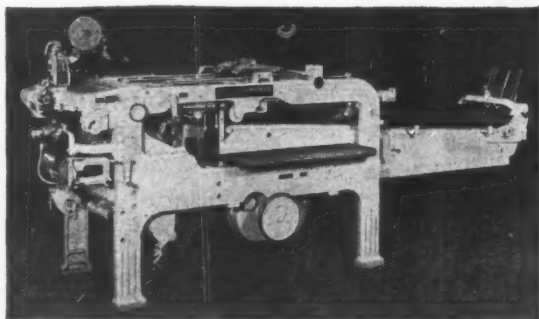
HOW FAST IS *fast?*

● The operation of wrapping machines in wartime has focused attention on the value of quick and easy adjustability. True, all builders of wrapping machines recognize this need. And a few have succeeded to a degree in reducing the set-up time on their machines.

● But, frankly, *How fast is FAST? Let's be specific!* The "Oliver" owner commonly finds his girl-operators making a complete change for package size and length of wrapper, and also changing and threading the roll of thermoplastic labels in less than four minutes!

● *When speaking of fast adjustment, that is what "Oliver" means!* It explains the amazing popularity of the "Oliver." Girl-operators maintain a smooth, fast production pace wrapping a variety of packages in trays, cartons, U-boards or flat cards, using almost any heat-sealing wrapper.

● *One handwheel* adjusts the folders, tuckers, hot plates and discharge. A simple motion adjusts the length of wrapper *even with the machine running!* Rolls of labels can be changed in a jiffy. Change from "endfold" to "underfold" at the flick of a finger.



BUILT IN 5 DIFFERENT SIZE RANGES

Automatic Cardboard Folder and Feeder
Automatic Roll-Type Labeller
Automatic Coding of cards, cartons, labels
Multi-Color Labels—printed by "Oliver"
6' 9" or 12' Infeed Conveyor for assembly work
Photo-Electric Registration of printed wrappers

● Besides, the "Oliver" handles packages in *widest range of sizes*. Has self-centering paper roll holders and automatic paper stop. Plan your postwar packages with the "Oliver." *Write for details!*

OLIVER MACHINERY COMPANY, Grand Rapids, Michigan

"OLIVER"

AUTOMATIC VARIETY WRAPPING MACHINE

an overhead case feed, the cases are brought in at floor level and placed at one end of the packing line. A truck containing the equipment to be packed is brought into position at the end of the line and by means of the hoisting device the equipment is raised off the truck and lowered into the packing case. Work will then proceed as on other packing lines, until the completed pack is ready for removal. This is accomplished by lifting it off the end of the line into a mobile truck which can be taken away to the dispatch area.

For the type of stores that cannot be manually handled on roller conveyors, island packing sites are created and the flow principle is applied to the teams of operators. Each team is provided with mobile work benches and after the case has been put in position and the stores dropped into it, the packers, nailer-binders and stencilers do their work in succession.

The great feature of the flow packing method used by the British Army is its flexibility and adaptability. While we have dealt to some extent with details, it is the principle that is important. No attempt has been made to impose exact plans upon each depot. The purpose has been solely to speed up operations by flow methods and, in fact, each depot has contributed ideas which have led to the modification of the plan as originally conceived, generally in favor of greater all-round simplicity.

Acknowledgment: Thanks are due the British Information Services and the British Ministry of Production for information and illustrations.

Foil barrier . . .

(Continued from page 107) dye, so as to make them readily distinguishable, but nothing has yet been standardized.

The use of aluminum foil as the primary water-vapor barrier for Ration K is but one of many uses for this material developed by the war. Aluminum foil rolled to thicknesses ranging from 0.00035 in. to 0.001 in. or slightly heavier, soft annealed and then combined with paper, regenerated cellulose, cellulose acetate and other materials is used also for the packaging of many other military items of supply.

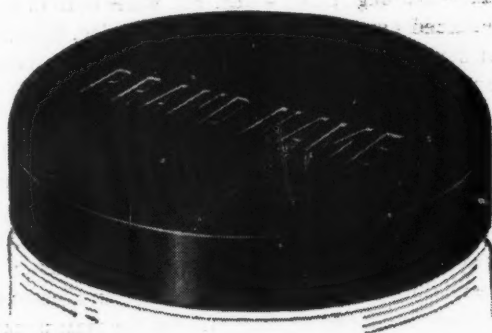
CREDITS: Laminated wrapper, "Maraweld," Marathon Corp., Menasha, Wis.; aluminum foil, Aluminum Co. of America.

Meatless foods . . .

(Continued from page 114) protective qualities have by no means been neglected. One of the cereal's greatest assets is its crisp over-freshness. This crispness and flavor must be protected from atmospheric moisture both in the store and in the home. Loma Linda Food Co., therefore, devised an interior packaging which keeps the unused portions of the cereal in factory-fresh condition even after the package has been opened. The contents are divided into four parts and each part is enclosed in its own sealed wax-paper bag.

CREDITS: Cans, Continental Can Co., Los Angeles. Glass containers, Glass Containers, Inc., Los Angeles, and Hazel-Atlas Glass Co., Oakland, Calif. Closures, Anchor Hocking Glass Corp., Los Angeles. Rusket Carton, Standard Paper Box Corp., Los Angeles. Liners, Western Waxed Paper Co., Los Angeles. Labels, Schmidt Lithograph Co., San Francisco.

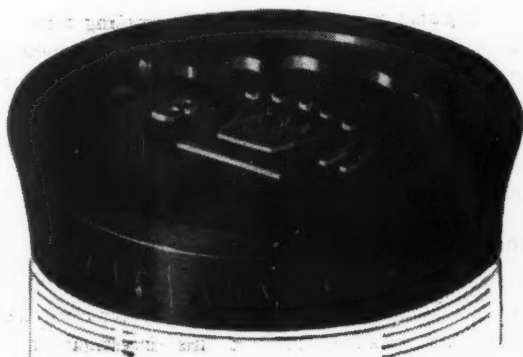
EYE-CATCHING IDEAS FOR YOUR PRIVATE MOLD CAPS



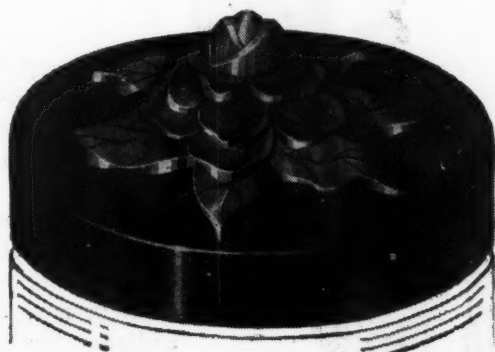
SIMPLICITY marks this modern, low-cost Armstrong's Artmold Cap. Your brand name can be pressed and filled in with eye-appealing, contrasting color.



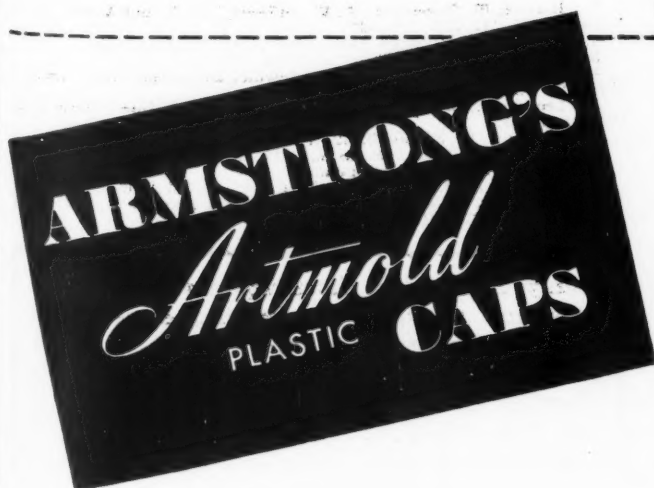
JEWEL-LIKE, the polished facets of this distinctive Artmold Cap, made in your own color combination, catch customers' eyes with flashing rays of reflected light.



CLASSIC beauty of this decorative intaglio Artmold Cap provides dignified distinction, builds customer recognition for your package, and increases sales.



FLORAL and beautiful relief designs are made to meet your specifications in Artmold Caps to give extra style and distinction to "luxury trade" packages.



YOUR PACKAGES will need extra style and individuality to compete in post-war markets. Provide it with Armstrong's Artmold Caps. Get free design suggestions now by sending a sample or drawing of your package to Armstrong Cork Company, Glass and Closure Division, 5908 Prince St., Lancaster, Pa.



NOVAR DECALS

INDIVIDUALIZE STANDARDIZED PACKAGES



Novar colorful decals, made to your order in your design (or we'll create one especially for you), in a complete range of colors, lend the touch of individuality to the simplest, most standardized container! Applicable with equal ease to glass, ceramic

and plastic surfaces, they can be put on the package right in the packager's plant as an integral step in the production line. Many packagers rely on a simple standardized container (the easiest to buy in these days of shortages) and utilize Novar decals to perform the decorative, identification function.

PALM, FECHTELER & CO.

220 W. 42nd St., New York 18, N. Y.
21 E. Van Buren St., Chicago 5, Ill.

Vacuum pack . . .

(Continued from page 145) became soft again; this provided a simple test for faulty packs.

Tests. Dropping tests using packages containing 8 oz. of milk powder (30 in. onto a cement floor) were conducted at low temperatures. Two packages dropped at -40 deg. C. (-40 deg. F.) were fractured, one package out of two fractured at -15.6 deg. C. ($+4$ deg. F.), while both of two packages remained gas-tight at -22 deg. C. (28 deg. F.), indicating that at sharp freezing temperatures the package became too brittle to withstand rough handling.

A factory test was made with 50 packages of this type, each packed with 20 lbs. of dried whole milk powder. The only extra equipment required was a mandrel and sealing irons. One package only was defective; this indicated reasonable commercial feasibility. Shipping tests were done with four of these packages packed in a corrugated master carton. Packages were shipped by express, examined and returned, then immediately reshipped by freight. On the return journey by freight one package broke down.

The results of the storage experiment are shown in Fig. 3; the experiment was concluded after nine months of storage since many of the flexible containers had lost their vacuum. Gas-packing by either method appeared to effect little improvement in the quality of stored milk powders. The better palatability in samples stored at temperatures of about 37.8 deg. C. has been noted (7); both of these features are under investigation (8).

Flexible packs were tested at each sampling time by their hardness. At six-month sampling all the non-metallic containers were still hard. At the nine-month sampling, all 8-oz. and 20-lb. containers at 37.8 deg. C. were soft, while at 26.7 deg. C. one of three 8-oz. and one of three 20-lb. containers were still hard. Alterations to extend the usefulness of this pack beyond six months are under investigation.

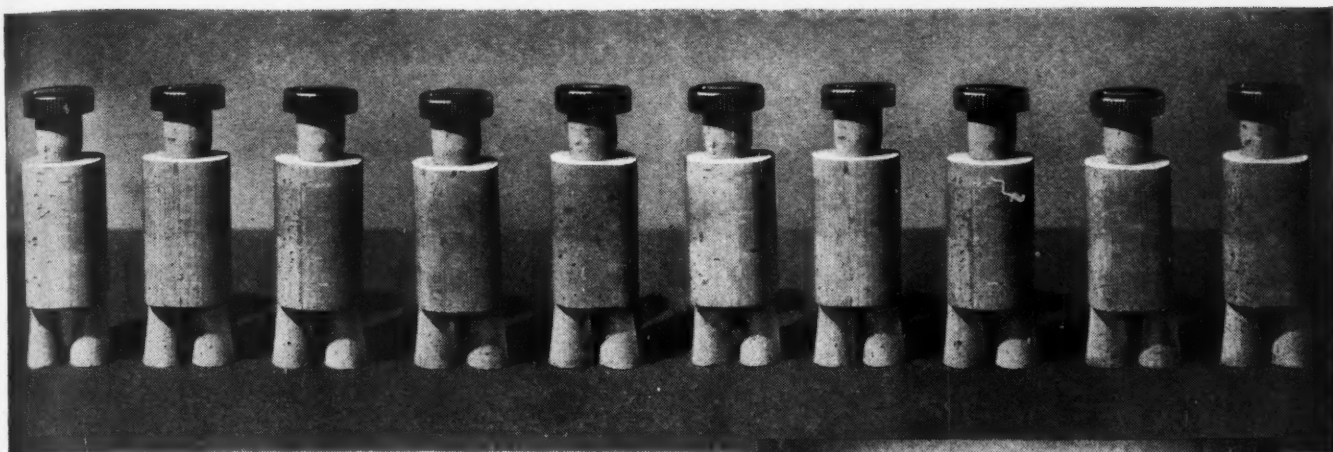
Acknowledgments

The author wishes to express his thanks to E. S. & A. Robinson (Canada), Ltd., who kindly prepared the films, examined the packages used in this investigation and assisted in shipping trials; to Cow & Gate (Canada), Ltd., at whose factory commercial trials were made; to Dr. J. A. Pearce, biochemist, National Research Labs., for storage experiments; to H. Tessier, laboratory assistant, National Research Labs., Ottawa, Canada, for technical assistance.

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Every honorably discharged veteran who has had previous packaging experience may insert, free of charge, a "position wanted" ad in the Classified Advertising Section of MODERN PACKAGING. Address the Classified Advertising Dept., MODERN PACKAGING, 122 E. 42nd St., New York 17.



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There's nothing like the dependable sealing of a good cork. Cork has been Mundet's specialized business for 80 years. The reliable sealing of Mundet Corks is due to experienced selection of the raw material, grading and processing. Even after expert grading of the raw cork, and selection of the best grades for stoppers, the finished corks are checked by sorters, carefully trained in this work, in a final grading of cork stopper quality.

Because of the original high quality of the raw material, Mundet Corks remain lively and resilient, do not "set" or crumble. Mundet representatives are conveniently located for helpful personal and material service. Mundet Cork Corporation, Closure Division, 65 S. 11th St., Brooklyn 11, N. Y.

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CORK CLOSURES



Stitch with Steel the **FASTEST** way to **STRONG CLOSURES**

Rapidly formed steel stitches drive continuously through tough boxboard, patterning into balanced-strength joints and closures. That's stitching with steel . . . the *fastest* way to strong carton closures.

Stitching with steel saves manpower by speeding production — provides stronger, neater containers — all in an economical operation that is a Silverstitcher feature.

Acme Silverstitchers are power driven machines that form staples from continuous long length coils of steel wire . . . Silverstitch Stapling Wire. Silverstitchers have few moving parts . . . vital parts reversible for long service. The result: *Years of top performance* through simplicity of operation.

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ACME STEEL COMPANY
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ALSO MANUFACTURERS OF ACME STEELSTRAP AND STRAP APPLYING EQUIPMENT

For air cargo . . .

(Continued from page 103) piece of stem glassware was broken. Contents of every other package survived the drops in perfect condition, although containers themselves showed varying degrees of damage to complete failure. Drums came through in the best condition, sometimes without any damage or only slightly wrinkled or dented. The wooden box containing bottles of wine and china cups was completely smashed but contents were in perfect condition.

The plywood containers had their ends broken, although the plywood box within a plywood box sustained the drop with no damage at all. The corrugated carton within a corrugated carton survived the fall with outside box ends broken and sides torn.

In cooperation with the parachute company, the company made a series of parachute drop tests witnessed by a MODERN PACKAGING representative. A set of similar containers, all packed with fragile merchandise was used. The boxes, cartons and drums each fitted with a 9-ft. parachute and sometimes two parachutes were dropped at a height of 250 feet from a secondary Waco trainer plane flying at the rate of 115 miles an hour. Among the articles dropped from the plane were phonograph records, a radio and 12 tubes, china and glassware, bottles of wine and bottles of medicine. Due to the careful interior packing, there was practically no breakage. All containers used were standard items of wood, corrugated, fibre or plywood which would be used for other means of surface transportation.

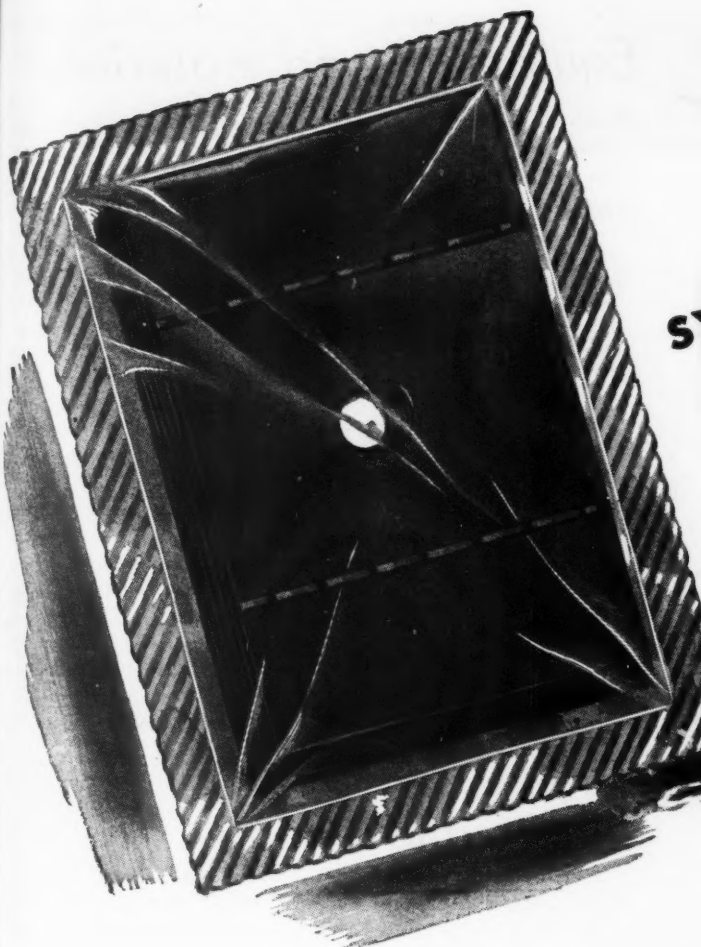
One interesting feature of the tests was the history of an 8-ply fibre drum with metal ends and lever-locking closure. This drum containing 32 pieces of china was first free-dropped down the elevator shaft in the warehouse and survived with contents intact and only a slight denting of ends of the container. The same drum was repacked with the same china and dropped by parachute. Again it reached the ground safely with all contents intact. A third time the same drum was repacked with the china and given a free drop of 250 ft. from the plane at 115 miles an hour. This time the ends of the drum were pretty badly telescoped although the fibre walls did not break. Inside 17 pieces of china survived the shock without breakage the third time the container was used.

Parachutes used for these tests were specially designed for package deliveries. They are equipped with special package harness and with static line for release at the desired point from chutes or hatches in the plane. Similar equipment was used successfully for a series of tests to demonstrate parachute deliveries of mail, glassware, china foods, pharmaceuticals as worked out at a Washington airport.

In all cases, tests showed that the most fragile items, properly packed, can be delivered in most standard containers—wood, corrugated, plywood, fibre—with almost 100% assurance of arrival in perfect condition.

CREDITS: Tests made by Manhattan Storage and Warehouse Co., New York. Parachutes and harnesses, Swillick Parachute Co., Trenton, N. J. Plane supplied by Parachute Drop Testing Service, Sussex, N. J. Fibre drum, Container Co., Van Wert, Ohio.

Last year our Reprint Department furnished 163,000 reprints of MODERN PACKAGING articles which attracted special interest. This service is available to all interested readers at cost.



SYLVANIA Means Cellophane
...it keeps Powder Dry



... keeps Cigarettes Fresh

TODAY in the driving rains and high humidity of our tropical fronts vital trench mortars are going into action because their powder is protected by Sylvania cellophane. Specially developed in Sylvania's laboratories, these ammunition wrappings keep out water and moisture vapor, insure effective propellant powder under the most difficult conditions.

The qualities of versatile Sylvania cellophane that keep moisture from powder are equally effective in controlling moisture in cigarettes and other products. Therefore better protection through cellophane will be available in the postwar world as a result of Sylvania's unique wartime developments.



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Manufacturers of cellophane and other cellulose products since 1929

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AUGUST • 1945

177

Angier

OF FRAMINGHAM

50th Anniversary
1895-1945

CORROSION
THE TOUCH OF DEATH TO STEEL

HOW TO
PREVENT IT

BROWNSKIN
GRIZZLYBEAR

Scores Again

HOW TWO WAR WRAPS ARE STILL GOING "OVER THE TOP"

Two colorful folders illustrate the story. Send for them if you are interested in newer and better ways to protect wartime metal products from corrosion—from all kinds of wet-dirt-moisture damage while in transit or in storage.

How INDUWRAP, because of its exclusive engineered features, is still winning the battle against corrosion for builders of airplane engines and many highly-finished precision parts. How BROWNSKIN GRIZZLYBEAR (A-19) is still helping to solve for Chrysler of Canada the problem of delivering their engines safely overseas.

These two wraps, and many others of Angier make, have proved in war their quality-right to lasting preference in peace—when peace arrives. They come from the house that has devoted a half-century of protection to the products of our nation and its industries—in peace and war.



When writing for samples and literature,
please mention by name this magazine.

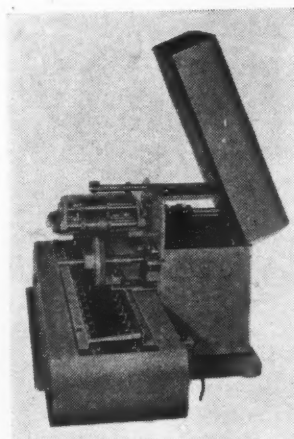


ANGIER CORPORATION
CORROSION PREVENTIVE AND WATERPROOF PAPERS
FRAMINGHAM, MASSACHUSETTS

Equipment and materials

(Continued from page 154) a handy mimeographed scale showing cost per 1,000 sq. in. of paper converted to price per ream—500 sheets. Copies may be obtained from the company.

PER MERRY PRINTER FOR CYLINDERS



An automatic unit which prints the periphery of a large range of cylinders is being manufactured according to customer specifications by The Superior Type Co., Chicago, Ill. Motor driven and conveyor fed, the model shown here prints the periphery of cylinders from $\frac{5}{16}$ in. to $1\frac{15}{16}$ in. O. D. and from 1 in. to 7 in. in length. It is equipped with ink reservoir and ink distributing rollers and rapid changeability of copy is provided by steel die plates to which rubber printing dies are mounted. Maximum printing area: 360 deg. circumferentially— $3\frac{1}{2}$ in. longitudinally.

Rate of production: 3000 per hour—can be increased or decreased by variable pitch pulleys.

Plants and people

(Continued from page 156) Flame, house organ for the Phoenix Metal Cap Co., was denied the privilege of entering his famous magazine in future contests held by the Industrial Editors' Assn. of Chicago. A group of members, tiring of the monotony of the Flame always winning first honors, prepared a permanent award leaving the field open to other contestants.

J. A. Lowander, assistant vice-president of Stein, Hall & Co., Inc., New York, and business manager of its Long Island factory has severed his connection with the company after 24 years of service. R. D. McCarron has been appointed manager of the enlarged Cincinnati branch of Stein Hall.

Dr. C. O. Ball, director of the process and product research division of the Owens-Illinois Glass Co., has been granted leave to work in Europe on a technical food project for the U.S. Army.

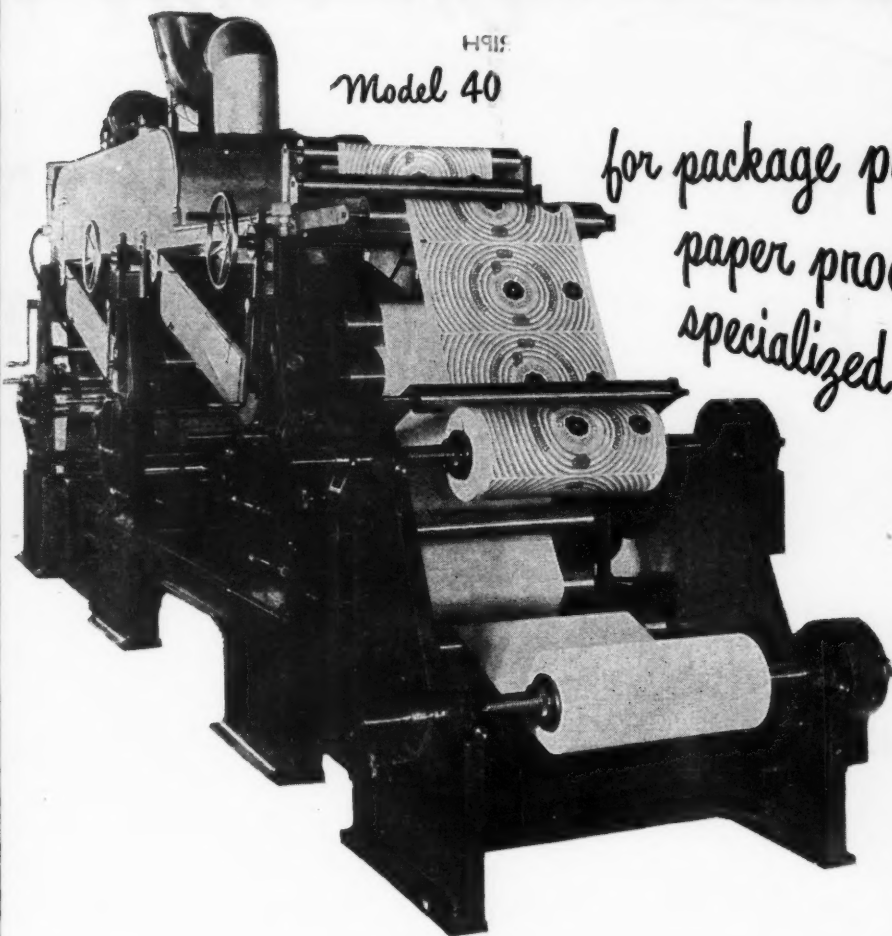
An Army-Navy "E" has been awarded the National Water-Proofing Co. of Camden, N. J.

Frederick C. Renner, general manager of sales of Monsanto Chemical Co.'s organic chemicals division, died of a heart disease on June 26, following a long illness.

For your information

(Continued from page 158) Hussman Refrigeration, Inc., of St. Louis, and is available to interested store operators through Hussman dealers. This book covers the subject in detail, including prepackaging procedures for self service. Thorough discussion is given on self-service selling of meats, dairy products, vegetables, frozen foods; and includes proven methods. For a copy, write to the company, 2401 No. Leffingwell Ave., St. Louis.

CORRECTION: Clarifying the credit mention on the item, "A Box with a Bubble" in Design Histories in the May issue (p. 108), the box was designed by Leonard A. Wheeler, of Pacific Designers, Los Angeles, and is manufactured by Fibreboard Products, Inc., and the L. A. Paper Box Factory, both of Los Angeles. Charles Cruze designed the special holiday wrapper illustrated. Outer folding sleeve is made by Standard Paper Box Corp., Los Angeles.



Model 40

*for package printing
paper processing
specialized printing*

ROTOGRAVURE PRESSES

by

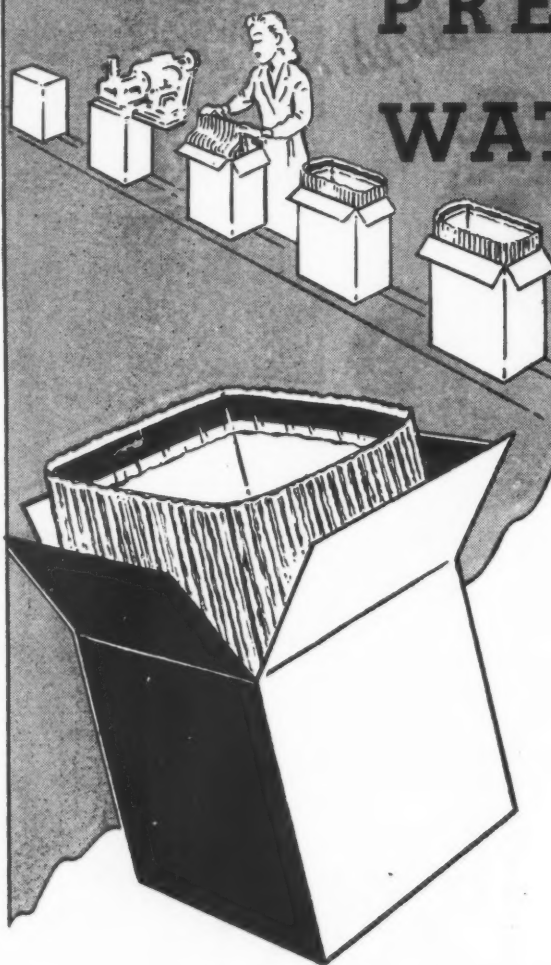
ROTOGRAVURE ENGINEERING CO.

[*division of MILLER PRINTING MACHINERY CO.*]

**299 MARGINAL STREET
EAST BOSTON 28, MASS.**

Get it There **ON TIME!**

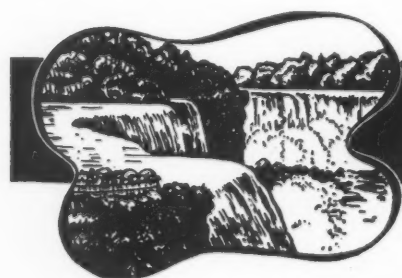
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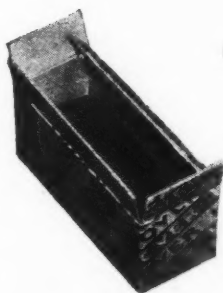
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Sales Office—220 E. 42ND STREET, NEW YORK, N. Y.

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AUGUST • 1945

181

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(Government Standard)

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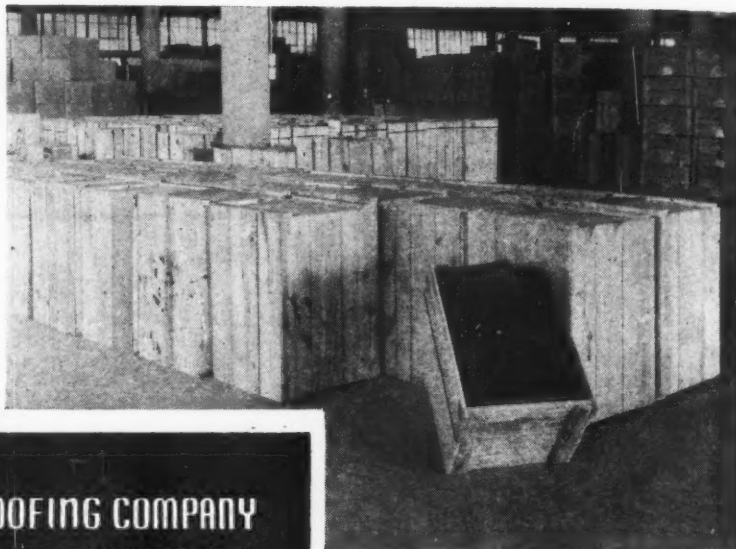
National WATERPROOFING COMPANY

FRONT AND BECKETT STS.

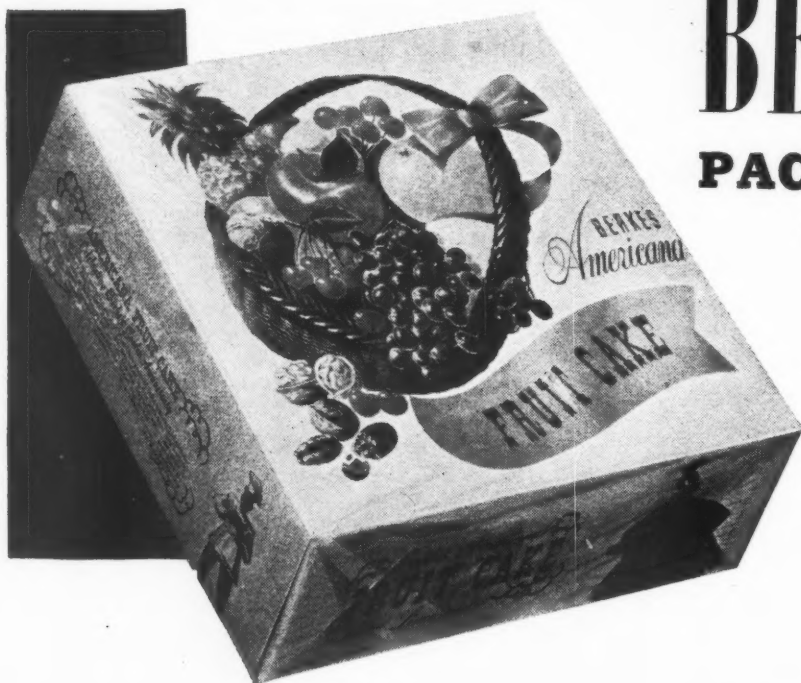
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experience in making
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"WHEN YOU CONSIDER that the annual consumption of Vermouth in the United States has increased ten-fold since 1939—you can appreciate why we do everything we know how, in order to please these new customers. Because our labels are our 'silent salesmen'—*they must stick*. We have been using Arabol Adhesives exclusively since we have been in business. We know they are reliable. What's more, Arabol always gives us good service."
—so states Mr. Gino Gambarelli, Plant Manager of Gambarelli & Davitto, producers of the famous American G & D Vermouth.

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ERMOLD LABELERS

DOES LABELING hold up the bottle parade on your conveyors? Or do you have Ermold Multiple Automatic Labelers? Here's labeling that *beats up* the procession . . . with output up to 12,000 an hour per machine . . . *hour after hour*, with little or no shut downs.

In models of 4, 6, 8 and 10 container capacity, the Ermold labels body and neck and applies foil, and dates or codes labels. New 1945 re-designing has improved all wearing parts . . . adjustments are held longer, maintenance and shut-down time cut further.

And if your output is diversified, there's the Ermold Semi-Automatic Labeler, with many of the Automatic's features . . . that labels any size or style container from tiny ampule to gallon jug.

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Has inherent flexibility and complete resistance to oils, greases, alcohol, turpentine, naphtha and other organic solvents.

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Shield-pak

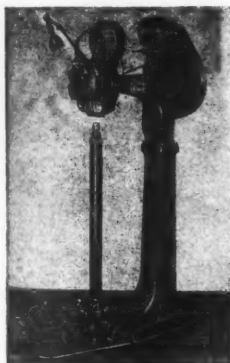
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Manufacturers of CORRUGATED PAPER PRODUCTS

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Bliss Heavy Duty
Bottom Stitcher



Latham Improved Bottom
Stitcher

Wire Stitched Shipping Containers Best Protect Your Goods in Transit or in Storage

Regular Slotted Containers with bottoms wire stitched are widely recognized as the strongest most rigid and dependable containers available. Wire stitching utilizes the entire strength of the board and is unaffected by moisture conditions in storage or transit.

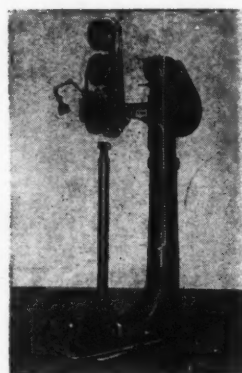
For your stitching equipment, it will pay you to investigate the machines illustrated here, before you buy.

THE BLISS HEAVY DUTY BOTTOM STITCHER is recommended for heavy duty, high speed, continuous production. Favorably known as the fastest, strongest, most durable and dependable Bottom Stitcher built.

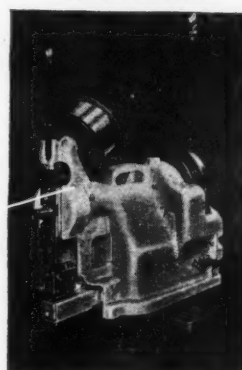
IMPROVED LATHAM BOTTOM STITCHER is a moderate priced machine, recommended for stitching the lighter grades of corrugated and solid fibre containers, in all the usual sizes which do not require the heaviest kind of stitching. Has many features heretofore found only in the highest priced machines.

BLISS DUPLEX BOTTOM STITCHER drives two stitches simultaneously, increasing production 50% to 60% over single head stitchers. Popular in plants handling large quantities of containers for canned goods, bottled goods, soaps, etc. Stitches spaced $2\frac{1}{4}$ " apart. No adjustments for various sizes of boxes within its range. Uses Bliss Duplex Stitcher Head. Throat length 15". Stitches 2500 to 4000 boxes daily.

FOR STITCHING FILLED BAGS, the Boston Portable Bench Stitcher has been found practical and convenient, as it can be readily moved to the work to be stitched. Operates from light socket—solenoid operated foot pedal.



Bliss Duplex
Bottom Stitcher



Boston Portable
Small Bag Stitcher

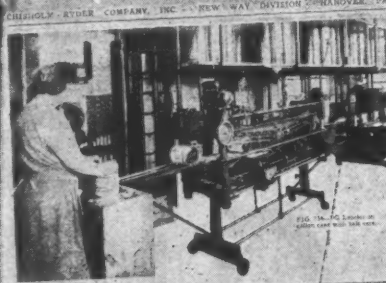
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DEXTER FOLDER COMPANY, 330 West 42nd Street, New York 18, N. Y.

Chicago: 117 West Harrison Street

Philadelphia: 387 Bourse Building

Cincinnati: 1335 Paxton Street

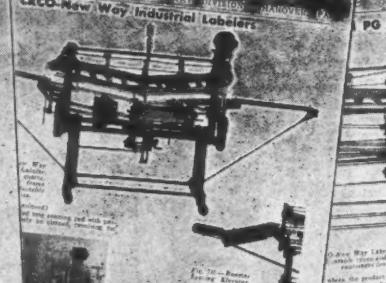


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Labels from 2 inches to 6 1/16 inches in diameter by 2 inches to 9 inches in height . . . with quick changeover feature which makes the CRCO New Way the most versatile Labeler available today. Can be used for wrap-around or spot labels. Consult your nearest CRCO New Way Representative or write direct.



CRCO New Way Industrial Labeler Specifications and Attachments

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NEW WAY DIVISION

HANOVER, PENNA.



Sealed to Prevent
COLOR CHANGES

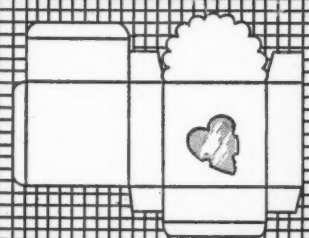
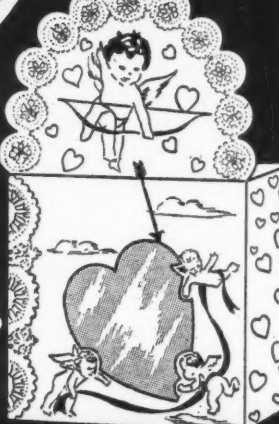
Don't make the consumer ask "which bottle is the freshest?" With vinegar, as with many other bottled products, uniform color means uniform quality. "Filma-Seal" protection keeps air out, preventing changes in color; double seals your bottle against sampling and leakage. Investigate "Filma-Seal."

The Double Seal Of Protection: "Filma-Seal" Cap And Seal Applied As One

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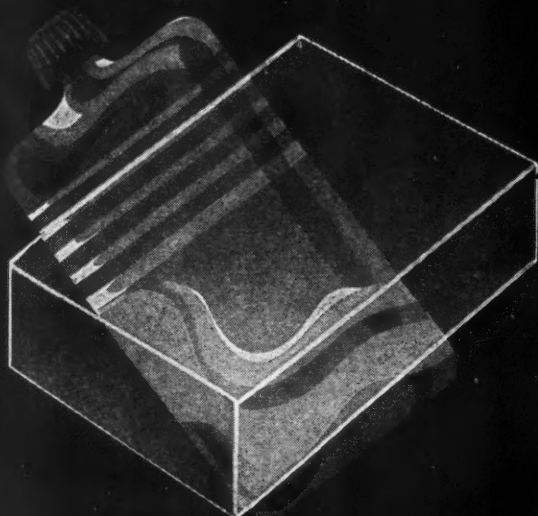
CELLOPHANE WINDOW BOXES

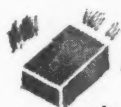
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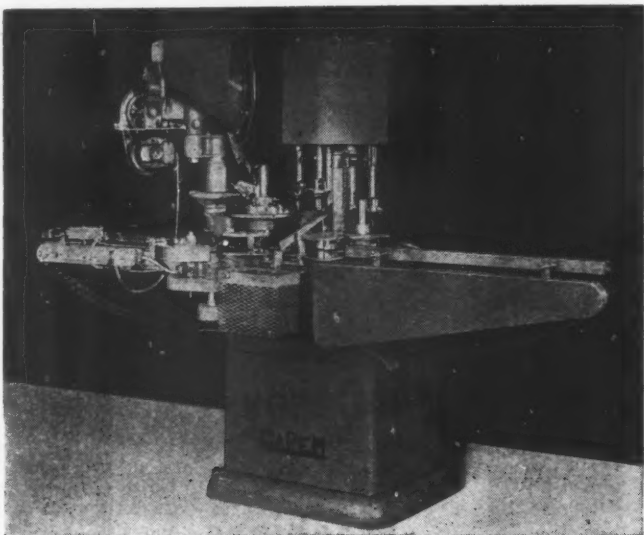
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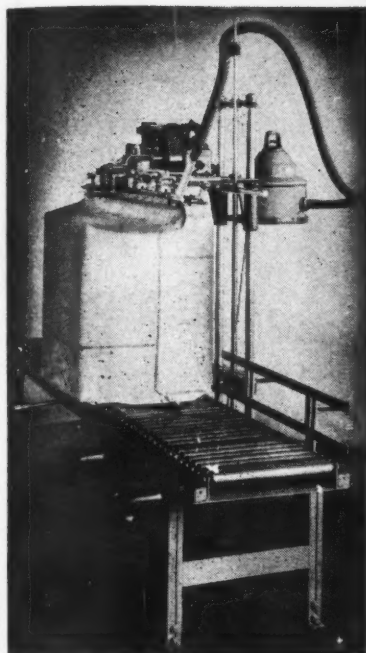
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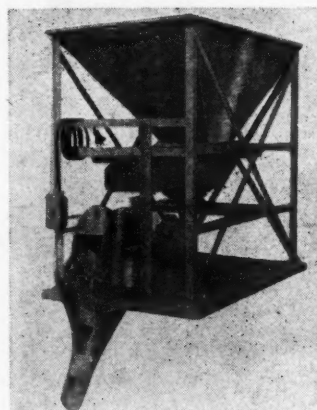


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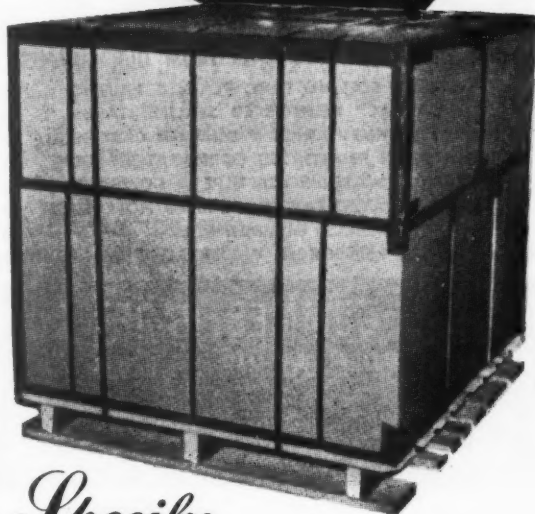
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E. W. TWITCHELL, INC.**

OFFICES: 700 Public Ledger Building, Philadelphia 6, Pennsylvania
MILLS: Hamburg (Sussex County), New Jersey

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OF FIBREBOARD
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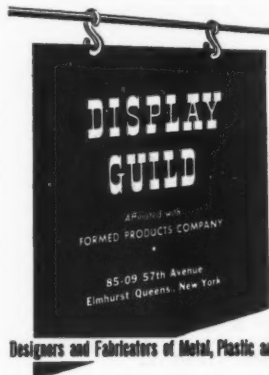
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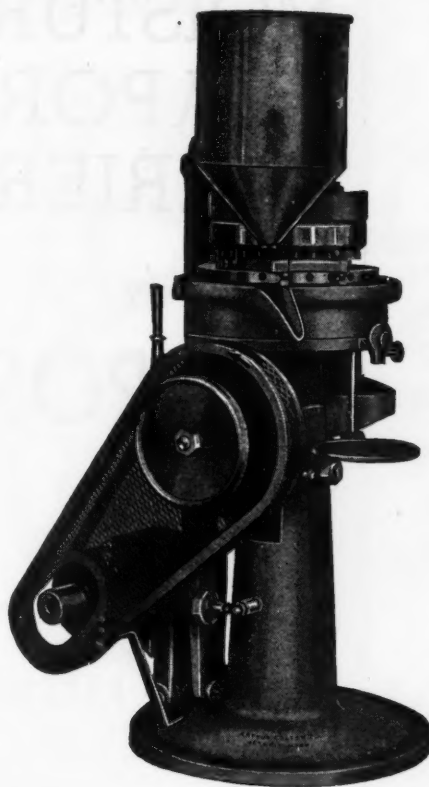
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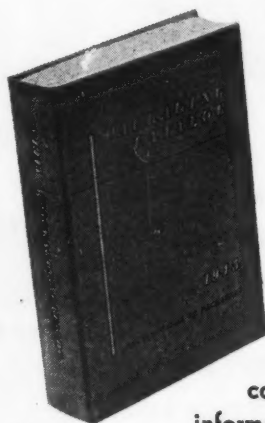
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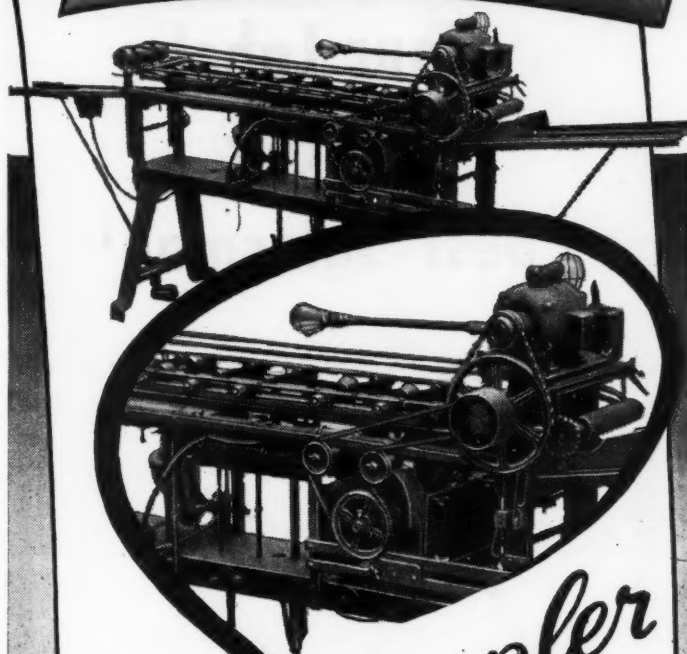
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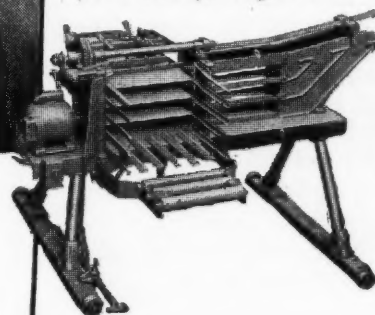
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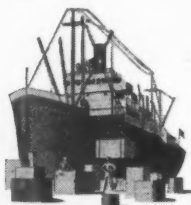
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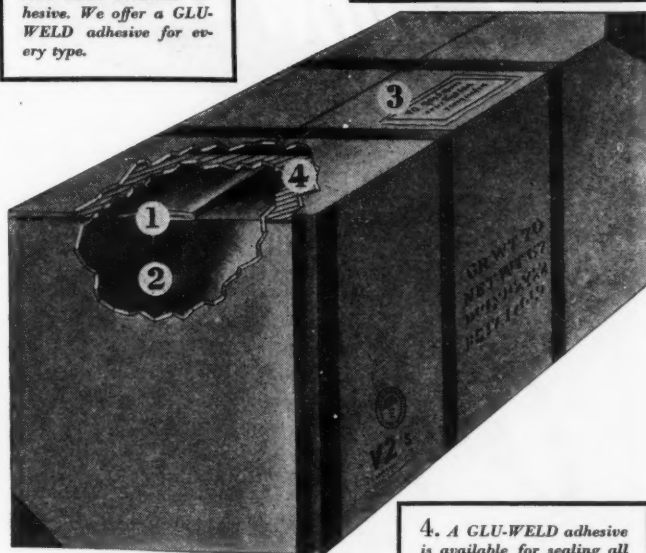
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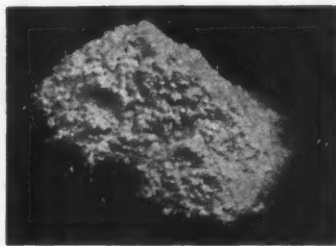


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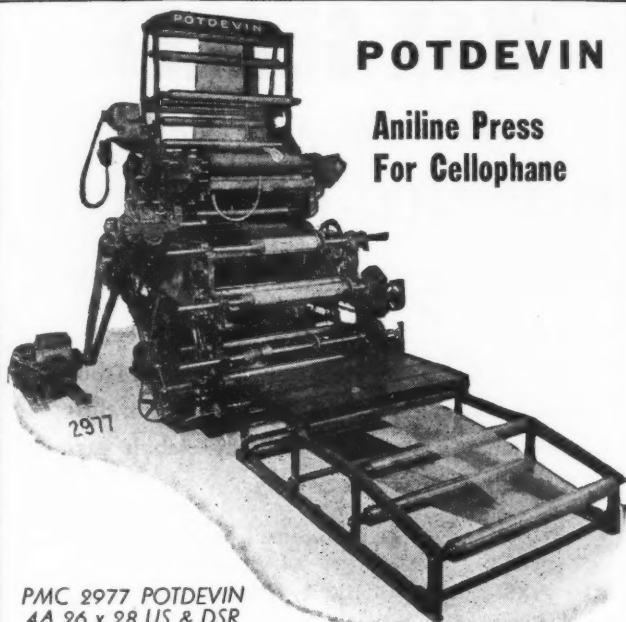
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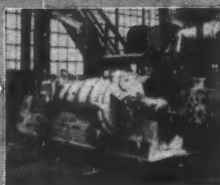
GLASSINE and GREASEPROOF

HOW IT IS MADE. WHY IT IS SO WIDELY USED
IN PROTECTIVE PACKAGING.



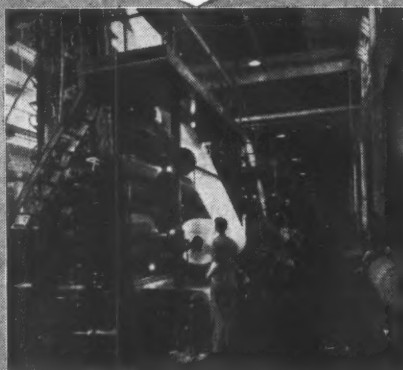
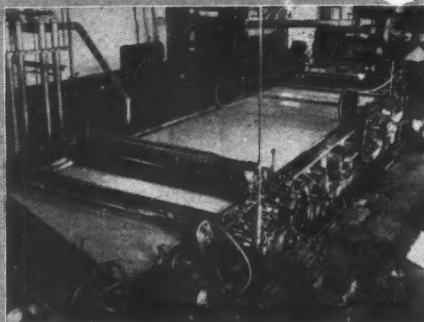
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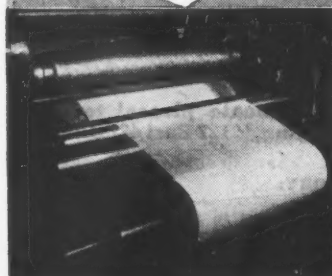
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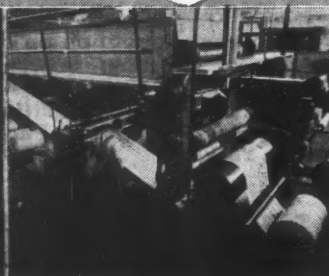
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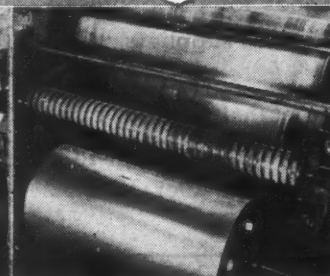
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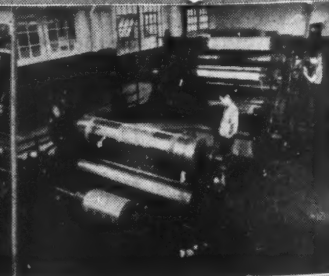
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Like swords beaten into plowshares, the Resinox that's been molded into the business-end of millions of mortar shells will go, in peacetime, into the business-end... the caps, closures, premium containers... of sales conscious post-war merchandise.

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- ...rigidity and strength to perform in service and to resist strong torque action of capping machines
- ...adaptability to modern, high-speed molding
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Molders who are preparing to convert to peacetime production will find Resinox ready, too. Merchandisers who are preparing to convert to an active competitive buyer's market again, will find Resinox a proved, dependable choice.

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RESINOX-FOR-PACKAGING FACTS

STRENGTH	Tensile strength—4200-8000 lbs./sq. in.
	Compressive strength—20,000-30,000 lbs./sq. in.
	Flexural strength—8000-12,000 lbs./sq. in.
STABILITY	Water absorption (after 24 hours) 0.01-0.06 Affect of age—None
HEAT RESISTANCE	Distortion—240-275° F.
GENERAL PROPERTIES	Colors—Darker Opaques Specially formulated materials for minimum odor and taste Rockwell Hardness—M85-M125

The broad and versatile family of Monsanto Plastics includes: Lustron* polystyrenes • Cerex* heat resistant thermoplastics • Vinyl acetals • Nitron* cellulose nitrates • Fibestos* cellulose acetates • Thalid* for impression molding • Resinox* phenolics • Resimene* melamines • Forms in which they are supplied include: Sheets • Rods • Tubes • Molding Compounds • Industrial Resins • Coating Compounds • Vuepak* rigid, transparent packaging materials.

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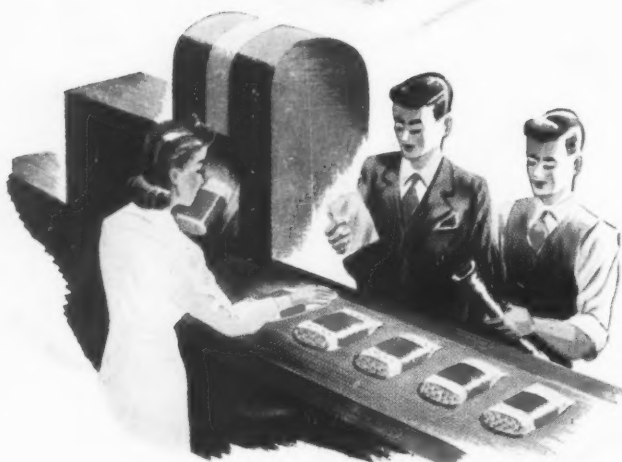
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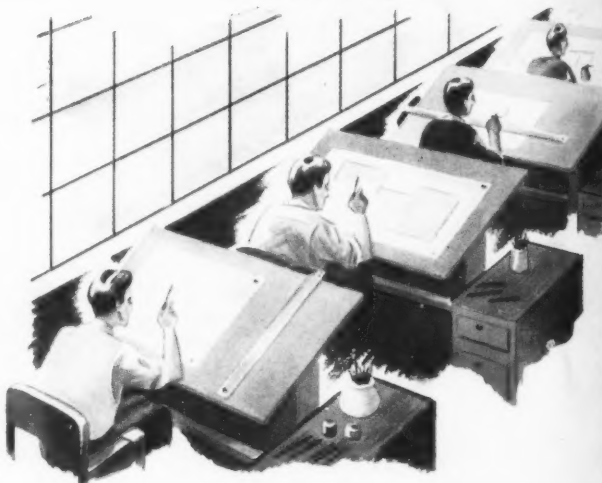


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